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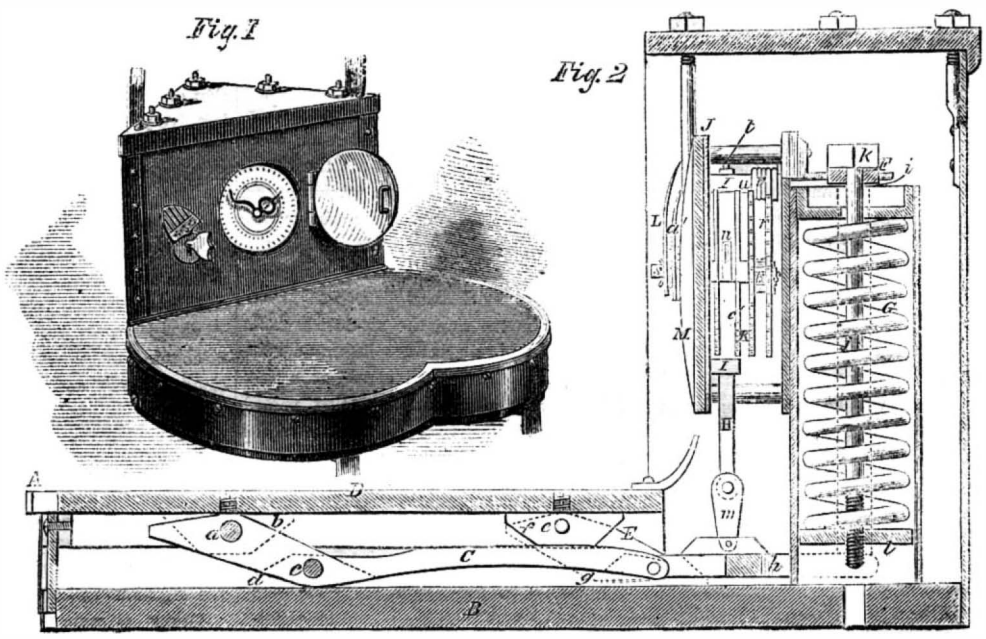
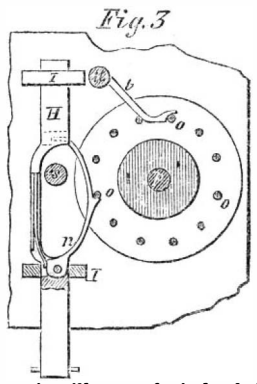
IMPROVED OMNIBUS REGISTER.

The experience of omnibus owners shows that it is difficult to procure a large body of laboring men, at low wages, whom it is safe to trust with the money of others without any check on their honesty; it is said, indeed, that three-quarters of the stage-drivers of this city are guilty of peculation from their employers. Various schemes have been suggested to prevent these depredations. The Sixth-avenue Railroad cars are furnished with a register which consists of an index moving on a dial plate, worked by the conductor, who pulls a strap on the entrance of each passenger, by which a bell is struck, and the index moved one mark or number; at the end of the route, the officer who starts the cars at the proper times records the number indicated, and sets back the index to zero. On some of the omnibus routes, the box for the money is furnished with a hopper, having a glass side towards the passengers, in which the exact amount of the fare is deposited by each passenger, when the driver pulls a string which opens a slide and drops the money into the box; the driver not being allowed to touch the money, which is, indeed, entirely inaccessible to him. In case the passenger cannot make the exact change the driver will change his coin, being supplied with small pieces for this purpose. This is a New Orleans invention, and has met with considerable favor in different parts of the country None of the plans hitherto devised, however, have received sufficient approval to secure their general introduction, and we respectfully invite the attention of the owners of omnibuses to the plan which is here illustrated for registering the entrance of each passenger by the depression of the second step of the stage, thus making the passenger register his own fare.



KEAGUE'S IMPROVED OMNIBUS REGISTER.

Fig. 1 is a perspective view of the apparatus, which is intended to constitute the second or upper step of the stage, resting on the bars in place of the plank at present in use, so that it may be attached to the omnibuses now running with the greatest facility. The platform, D, Figs. 1 and 2, rests upon the short arm of a three-pronged lever, C, Fig. 2, which has its fulcrum (or three fulcra) at *c*, Fig. 2, and actuates with its long arm an index on a dial plate. The position of the platform is further steadied by two short levers, E, which are placed near the sides and near the back part of the platform, and which are secured to the platform and to the bedplate by means of the pins, *e*, which pass through the lugs, *f* and *g*. The long arm of the lever, C, actuates the sliding-rod, H, and imparts motion to the clockwork and index, L, on the dial plate. M, in the manner fully illustrated in Fig. 3. As the rod, H, rises, the notch in *n* catches under the pin, *o*, of the wheel, K, and rotates the wheel one notch, where it is held by the pawl, *t*; the motion is reduced by the pinion, *q*, and wheel, *r*, and conveyed to the index, L, on the dial plate. Resting upon the end of the long arm of the lever, C, is the rod, *j*, which passes by a screw through the sliding plate, *l*, this plate being depressed by the spiral spring, G It will be seen that the tension of the spring, G, may be augmented by turning the rod, *j*, and increasing the length of that portion which extends below the plate, *l*; and this tension may be diminished by turning the rod, *j*, in the opposite direction. In this way the resistance to the motion of the lever, C, may be so adjusted that any desired weight will be requisite to rotate the wheel, K, one notch. The dial plate is so marked that the rotation of the wheel, K, two notches, carries the index on the dial one number. Now, if the spring is so adjusted that it will require 50 lbs. on the platform to move the wheel, K, a notch, a full grown person will effect a motion both in getting into the stage and in stepping out, while a child weighing less than 50 lbs. will not move the index when getting into the stage, but in stepping out, as the body comes down with considerable momentum



upon the platform, it will move the index half a number; thus the register records a full number for a grown person, and half a number for a child. By adding a second index and proper clockwork, any number of fares may be registered which may be desired. The dial is protected by a cover which is securely locked from even the inspection of the driver, and is opened and examined by the proper officer as may be regulated.

The patent for this invention was issued Oct. 11, 1859, and persons desiring further information in relation to it will please address the inventor, William M'Keague, or J. M'Keague, 127 Myrtle-avenue, Brooklyn, N. Y.

AN ANCIENT AND VALUABLE CLOCK.

There is now at the shop of Mr. Alexander Allen, in Richardson's building, Buffalo-street, an old clock of elaborate workmanship and curious style, undergoing repairs. It is the property of Ellicott Evans, Esq , of Buffalo, to whom it descended from his uncle, the late Joseph Ellicott, Esq., of Batavia, surveyor of the Holland Land Company. It was constructed by the last-named gentleman's father, Joshua Ellicott, and is supposed to be 90 years old at least. There are three dials to this curious time-piece, one of which indicates the year, month, day of the month, time of the day, changes of the moon, &c. Another dial shows the position of the heavenly bodies; and is, in fact, an orrery in which revolve the planets, Mercury, Venus, Mars, Jupiter, Saturn and the earth, with its attendant moon. The third dial is a musical index; for, with its other accomplishments, the clock is capable of playing, when in order, no less than 24 tunes. The thing is a real curiosity, and, when put in order, as it will be within a week or 10 days, cannot fail to be worthy of inspection.

Mr. Allen fell in with this clock several weeks ago, while on a visit to Buffalo, examining some time-pieces belonging to the Central Railroad, which he was employed to repair. Happening to call at a clock and watch establishment, his attention was attracted to an old-fashioned clock case, and, on inquiring about it, he was told its history. The works were shown to him, lying neglected in a box, and supposed to be useless, nobody thinking it possible to put them together perfectly. Being somewhat of an enthusiast in such matters, and a thoroughly competent man withal, he made a slight examination of the machinery, and modestly stated that he thought he could set the old clock running again as well as ever. The remark was reported to Mr Evans, and a few days after Mr. Allen's return to Rochester, he received a box containing the works, and a letter requesting him to try his hand upon them. He complied, and has already progressed so far that a satisfactory conclusion is certain. The musical part is already in running order, and it will not be long before the whole is ready to return to Buffalo, and be set up in the owner's residence. So much is the clock valued, that it is insured to the amount of $1,000.

We believe that time-pieces of this kind are not often seen in these latter days, but the date has been when they were objects of great desire with the wealthy and powerful. The first clock with an orrery attached, that we have any knowledge of, was completed for Louis XIV., of France, in 1749. The maker of it is said to have been 20 years in studying out the combinations. A good many have been made since that time, however, but they are only to be found in old families of opulence.—*Rochester Democrat.*

Since Sept. 1, the receipts of cotton at New Orleans have been 240,000 bales more than those of last year.

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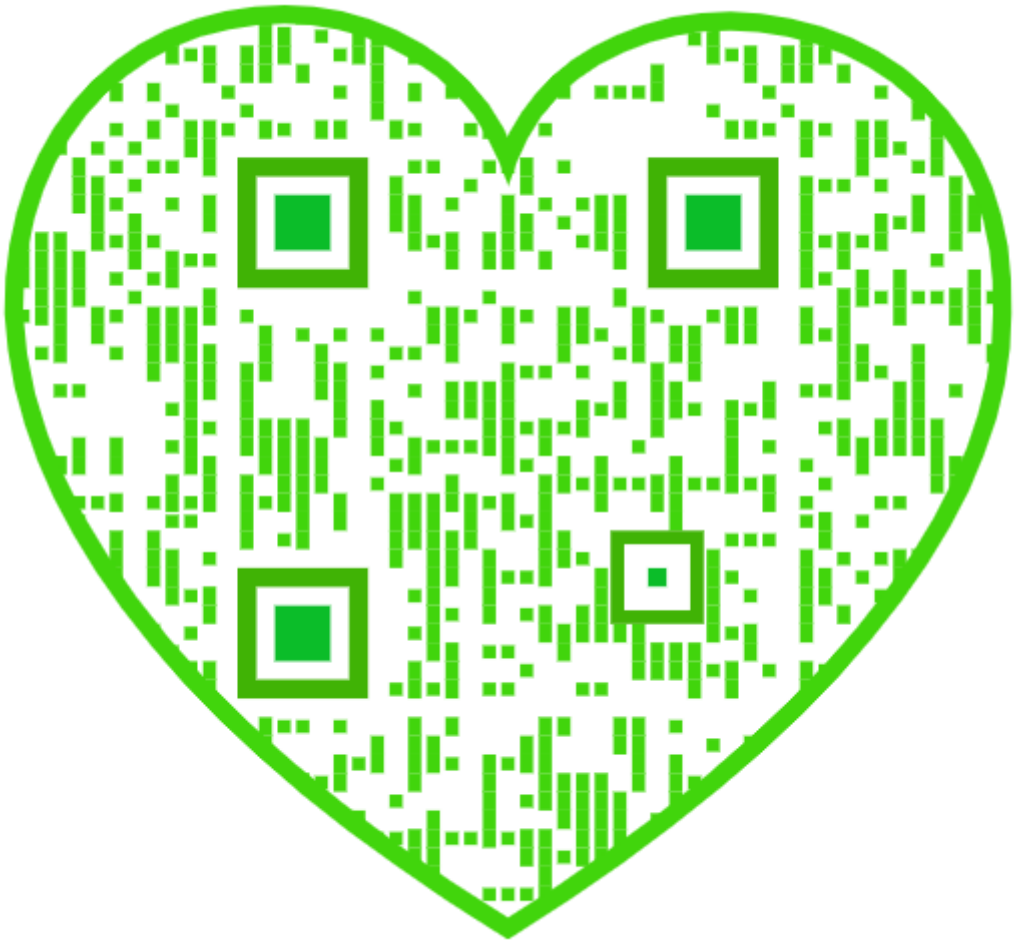

IMPORTANT HINTS ON VENTILATION

BY E. M. RICHARDS, C.E.

[Written expressly for the Scientific American.]

[Concluded from page 395.]

In sailing ships, the "gailey" or cooking fire is the agent by which the heated air should be assisted in its endeavors to escape from the cabins and sleeping berths. A wholesome sea-breeze should be allowed to enter in its place, through pipes connected with funnels on deck, which should be always placed "head to wind." The furnaces of steamers offer an abundant supply of power for ventilation, yet it is all allowed to go to waste, as far as the health of the passengers and crew is concerned; they seem to be not one whit in advance of their sailing brethren in this respect.

The ventilation of railroad cars offers some peculiarities, not to be found in that of houses and ships, arising partly from their crowded state (more persons often being found packed together in a car than in any other apartment of the same size), the rapid motion and the fact of having dust to combat as well as foul air. In this case the plan to be adopted differs from that before-described, inasmuch as the upcasts are unconnected with any fire for the purpose of drawing out the impurities of the atmosphere of the car, and the fresh air, instead of merely being *allowed* to enter through its conduits, is *forced* in by the flight of the train. Systems that depend on the driving of wheels, fans, belts, &c., and that require much supervision, have not, as a general thing, been very successful. To secure its introduction, a method must be somewhat self-acting; people are not yet sufficiently alive to the importance of the subject to trouble themselves about a plan that must be constantly looked after. As far as is known to the writer, the system to be explained below has not hitherto been tried; but the general principles, of course, have long been common property. There is no new fact brought forward; nothing is claimed for it, except that it involves a combination that gives a reasonable prospect of success in practice. As no opportunity for testing the matter by actual experiment has ever been offered, no attempt at accuracy of detail will be made; the general idea alone will be sought to be eliminated. At any rate, it will be freely given for what it is worth; and it is hoped that some railroad superintendent will give it a *fair* trial, and make known the result through the columns of the SCIENTIFIC AMERICAN. Should it fail, the publication of the fact will save others from fruitless endeavors in the same direction, and trial must be made elsewhere to secure the desired results; but if it is successful, or points out the way to subsequent improvers, it will be a great satisfaction to the writer to know that he has done something towards securing a healthful and pleasant atmosphere in our passenger trains, instead of the pestilential air now too frequently to be found therein. The system is as follows:—

The upcasts ought to be ample in size and number, and situated as usual along the center line of the car. The roof should have a high camber or rise, should be smooth and quite free from sunken panels or moldings of any kind; everything that can offer any mechanical obstruction to the upward passage of the heated gases should be avoided. In general, the upcasts (where they do exist, but on several railroads, even now-a-days, there are none) are too small, and they are badly constructed, having a metal molding round the line of junction with the roof. This is objectionable; for, in addition to being an obstacle to the ready entrance of the foul air into the bottom of the vent, it has a tendency to cool the ascending particles, which effect was before shown to be a hindrance to perfect draft. The external portion of the vent or upcast ought to be in the shape of a swiveling cowl, so constructed as to present its mouth always towards the rear end of the car when in motion. The mouth of the cowl should be surrounded by a broad circular flange or web, the object of which is to increase the surface of the tube, so that, by the rapid motion of the car through the air, it may cause a greater rarifaction behind it (just as moving a flat-board quickly with its broadside foremost, causes a slight vacuity in its rear) than the plain tube would have done. This rarifaction helps to draw the heated gas from the interior of the car; and the greater it is, the more thoroughly will it effect its purpose. The outside of the cowl ought to be painted a dull black, for this increases its heat in the sunshine. In the winter the color is of no consequence.

The fresh air is to be obtained thus:—On the outside of the roof, at corners diagonally opposite to each other, are to be two wide-mouthed "air-catchers"—one to supply each side of the car, and to be placed as near the side as practicable. These air-catchers resemble the cowls for the foul vents; being, like them, swiveling, but they differ from the vents by being arranged so as always to present their open mouths in the same direction in which the train is moving. Across these mouths are to be stretched fine wire gauze screens. Each air-catcher is to be connected with a large tube or main pipe leading down towards the interior of the car. Just inside the roof, and in a situation where water will never freeze when the car is in use, this pipe enters a small tank or cistern containing water, beneath the surface of which the end of the pipe dips to a short distance. From the upper part of this cistern another similar tube leads *up* for a very short distance, and then turns directly downwards towards the floor. At about the same level as the under side of the seats, this main inlet pipe is to run horizontally along next the side of the car for its full length. The small service or supply pipes are to branch out from this main at right angles to it, and run along the under side of the seats, terminating at or near the central passage of the car. The ends of the service pipes are to be so arranged as to prevent them from discharging an unpleasant stream of air on the legs of the occupants of the seat on the opposite side of the passage towards which they point. Each supply or service pipe is to be furnished with a stop-cock to regulate the amount of air passed in by it.

From the foregoing details it will be seen that, when the train is in motion, these air-catchers, with their large bell-shaped mouths made open towards the front, will pass down great quantities of air in proportion to their size and the velocity of the cars. The coarser particles of dust, cinders, &c., are at once arrested by the gauze spread across their mouths; and the air, thus somewhat freed from its mechanical impurities, runs rapidly down the tube connecting the air-catcher with the cistern; the end of this tube being a little under the surface of the water; and the current of air, in a vast number of bubbles, leaving all the fine dust that passed the gauze screen in the water, rises to the top of the cistern, where it enters the main tube that leads down to the service pipes; along this tube it passes, and in its course fills each service pipe under the seats, and is finally discharged into the car through their orifices at the proper level (between the floor and the mouths of the air-catchers), and rising up, supplies an abundance of pure air, free from dust, to the occupants The defective practice of admitting air either through the floor or over the heads of the passengers is thus avoided. In summer, ice may be put into the mouths (properly fitted to receive it) of the air-catchers and ice-water into the cistern, which will do much towards cooling the air before admitting it into the cars. In winter the stove pipes should be passed through the cisterns, so as to keep the water hot, and the inlet pipes near the cisterns to be cased in smoke-jackets to warm the incoming current. Most systems of car ventilation are intended for summer use, the prime object being to cool the carriage and abate the dust nuisance; while, as before stated, it is really in winter that the most injury to health is done by bad air: and for that reason, therefore, a scientific system of ventilation is most needed. The above described method is just as applicable (with the proper modifications) to one time of the year as the other.

The usual way of warming cars is very defective; the heat from them is only appreciably felt by those in their immediate vicinity, and even here they principally heat only the upper portions of the car; and thus, while they draw the external cold air through the floor, they keep the feet cold and the head hot, the very reverse of what it should be both for health and comfort. It has been proposed to have the cars heated by tubes containing hot air, hot water or steam, generated in some other part of the train—the baggage car or engine, for instance. There is this objection to all such projects, that they would be more or less inconvenient when coupling or uncoupling the cars. It would perhaps be better to try to effect the desired result by stoves in the cars, as now, only differently arranged. The following plan is submitted for consideration:—

Two stoves are to be placed in each car, one for each side, and located diagonally opposite each other, in the same way as the air-catchers before described. The pipes from these stoves, instead of passing directly out of the roof, burning the fuel with an upward draft (as at present done), should lead *downwards*, and run horizontally along the floor to the other end of the car, about perpendicularly under the middle of each seat; this horizontal pipe or flue should be made of pipe tile or other imperfect conductor of heat, and should be laid so as not to injure the floor and inconvenience the passengers; after having reached the opposite end, it should rise perpendicularly and pass out through the roof, where it would be connected with the cisterns and fresh air mains (in cold weather), as before mentioned. Some such plan as this would apply the heat where it always should be—at the lowest point; then its action, being ascending, would warm the whole car much more evenly than at present; above all, it would keep those vulnerable parts, the feet, protected against their greatest enemy, the cold.

In conclusion, should any reader of the SCIENTIFIC AMERICAN desire more information on the subjects discussed in the foregoing series of articles, he is referred to an excellent and cheap little work, entitled "Warming and Ventilation," in Weale's (London) "Rudimentary Series for Beginners," which is better adapted to non-professional persons than some of the larger and more pretending volumes.

A HOUSEKEEPER'S HINTS TO INVENTORS.

MESSRS. EDITORS:—I have been a regular reader of that excellent paper, the SCIENTIFIC AMERICAN, for the last five years; and my judgment corroborates the assertion of many of my male acquaintances engaged in mechanical pursuits, that no other journal published in this country, or perhaps even in the whole world, so constantly, faithfully and vividly records the onward and rapid march of *mind*, and the daily extension of its influence over matter, in the fields of art, science and general literature. It is the only paper which devotes all its energies to the promotion of the best interests of the mechanic and the inventor, and which, dispelling the clouds of doubt and anxiety that often vail the eyes and oppress the hearts of many men and women of genius, throws widely open the portals of the vast halls of discovery, and exhibits, in the far-off but brilliant vista of the future, a destiny more glorious than that which ever was appointed to the greatest monarchs—the admiration, honor and blessing which is invariably given by posterity to those who, during their lifetime, justly earned, by the ingenious embodiment of such of their intellectual creations as were practically useful, the proud title of benefactors of mankind.

Desiring to make the contents of this letter sufficiently interesting to warrant its publication in your journal, I will, without further preface, propose two questions that are of immense importance to every individual of my own sex. If barbarous nations, owing to their ignorance, are incapable of self-government, does not the same argument apply to *woman* in all past ages? Now, however, when woman is beginning to aspire to the enjoyment of the benefits of citizenship and all other "rights" at present possessed solely by the "lords of creation," should she not also aspire to a knowledge of the *arts*, particularly of such as directly concern her domestic duties? In the Shop, where intelligent men daily labor, desirable improvements are readily seen, and applied to the different tools and implements they use; but in the House, few intelligent men come directly into contact with the various implements of housekeeping. Hence, while we have to acknowledge the recent invention of several desirable improvements in some branches of housekeeping machinery, there is still a large field open for the ingenuity of intelligent women. Permit a woman, therefore, to present to practical artisans among both sexes, throughout the length and breadth of the land, in the columns of their special organ, the SCIENTIFIC AMERICAN, a few thoughts in this department of invention, which arise out of the writer's own experience in housekeeping; and if, in doing so, I violate the laws of the science of mechanics, I trust that my natural want of a practical education in the arts will be accepted as an apology for any blunder that I may make. But if, on the other hand, I suggest some real improvements, I shall hope to be gratefully remembered by those ingenious mechanics who may derive profit from the reproduction of my ideas in a practical and patentable form.

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The *kitchen stove*, which has more to do with the comfort of the house than any other article of furniture, has already been the subject of many useful improvements; yet there seems to me that there are two things in which it can be still further improved. The first is, making the openings on the top of the stove large enough to admit kettles with smooth, rounded bottoms (without any jogs), like those hung from cranes over kitchen fires, before the kitchen stove was invented. The sides of the kettle might be more perpendicular, but if we would have no burned dishes sent to the table, there should be no jogs or corners. Kettles simply for boiling water are well enough. But let us have at least *one* place in which we can set cooking kettles with thick, rounded, smooth bottoms, even at the expense of less openings or more surface. If the raised work on stoves is placed thereon simply for ornament, without reference to radiation of heat, I would have it dispensed with altogether. A plain stove would be much more easily kept clean, and this partly applies to parlor stoves also.

We require some apparatus for *airing beds*—an apparatus which shall elevate and separate each article of bedding, including the upper tick, so that the air may pass freely between each, when the windows and doors of the bedroom are opened to admit a fresh current of air; and which, when removed, should leave the bedding as before. If every bedroom had a balcony and glass folding-doors broad enough to permit the bed to be wheeled out into the air, this would be an additional improvement conducive to the preservation of health and life.

Again: there is great need of an apparatus for *washing dishes*, provided with a drainer so fitted that the plates, saucers, cups and bowls, may be taken from the table in piles, and laid on their sides in the drainer; each article being separated by a slat from the next, and hot suds and rinsing water being dashed upon them by machinery, leaving them to quickly drain themselves dry enough for future use.

If the foregoing suggestions should meet with favor, I may find time, at an early future period, to enumerate some other wants in the housekeeping machinery, equally deserving the notice of your readers.

MRS. VARNEY.

San Francisco, Cal., Dec. 1, 1859.

THE CONSTRUCTION OF STEAMSHIPS

MESSRS. EDITORS:—Under this head, your correspondent "Nauticus" (on page 362, this volume, of the SCIENTIFIC AMERICAN) says:—"Steamers must be built so as to secure great buoyancy, in order that they may not load too deep or light up to fast by the consumption of fuel and stores." He should have added, and reduce the resistence of a given cross section of immersion. The difference in pressure of the fluid to be moved at different depths, seems to be generally lost sight of. It being for the first 14 feet, only a mean of about 3.50 lbs. per square inch, while the mean pressure for the next seven-feet is about 8.75 lbs., and still the next seven feet it becomes about 12·25 lbs. per square inch. To overcome this power as the cube of the velocity sufficiently explains the reason of the *Great Eastern's* failure to meet the expectation of her proprietors; and why the Lake Erie steamers perform so well. Having spent much of the early part of my life upon the Atlantic, and leaving there with the prejudice common to all ocean taught men—the idea that nothing new could be learned upon the lakes; I soon found my mistake and set about improvement to meet the requirements of the then rapidly increasing business above the flats of Lake St. Clair. With this in view, I projected the first center-board vessel ever built upon Lake Erie or the lakes above, although I believe some small vessels had slip keels: her prow was long with very little dead rise, and ends quite sharp for the times; she was so far out of the ordinary line of model as to cause much remark, and the most experienced builder then in the West, asserted that he would not have such a vessel built in his yard, fearing his reputation would be injured thereby. But when the vessel was afloat, she told her own story, "by showing her heels" to all others; while she was carrying, relatively, a much larger cargo. From this vessel followed the immense tunnage of similar ones, comprising the great fleet of the lakes; some of which vessels have attracted considerable attention by their short passages across the Atlantic, and generally by showing superior sailing qualities when in company with sea-going vessels of different classes. These vessels when properly fastened, and not over sparred, are as safe for ocean service as any vessel can be.

Steamers were similarly built as to model one at a time when there were no harbors on the lakes. I was the first to take the charge of one to make trips regularly through the entire season to the upper lakes. She was then the largest steamer in America, but would appear small now; yet small as she was, she had to "bang out all weather," and she did this most successfully, and lived to die of old age.

The present fleet steamers of Lake Erie have similar floors with elongated ends and fine wave lines; hardly disturbing the water as they move through it. To give strength to their sides, instead of building them deep, and adding much unnecessary weight to be carried, arches of wood and truss work of iron are so disposed as to give great strength of "back bone" to a shoal vessel with little weight. If New Yorkers would stand in relation to ocean steamers, as they have done, and do now, in the fleetness of their sailing ships, let them discard their prejudice, look at facts, get a Buffalonian to build them a steamer, and they will soon follow with others, and be able to say "Come on, Cunarders! we don't want any Government subsidy." B.

Chicago, Dec. 14, 1859.

A WESTERN WONDER.

MESSRS. EDITORS:—In No. 23, "new series" of the SCIENTIFIC AMERICAN, I notice, under the caption of "A Remarkable Fact," an incident related by Professor Mitchell, of a gentleman in St. Louis of great scientific attainments. I venture to say that the gentleman referred to is Professor G. Seyffarth, A. A. M., Th. D.; and this caused me to reflect and wonder why it is that Professor S. is not more generally known. It is astonishing how many scientific men of very small caliber become known and exalted by the populace; while a man of no pretensions, with a modesty that can hardly be equaled, like Professor Seyffarth, is left unknown to the world until his ashes can hardly be found, when, lo! his fame spreads abroad, and becomes brighter from generation to generation, and the world is astonished that such a mind was not valued in the time of its earthly existence. Professor Dr. Seyffarth is doubtless well-known by the scientific men of the world, but not popularly; yet his researches in chronology have never been equaled by any mortal being, and are more valuable than all the gold found in California.

C. G. M.

Fort Wayne, Ind., Dec. 13, 1859.

NEW IDEAS ON AIR NAVIGATION.

MESSRS. EDITORS:—Under the above title you recently gave Dr. P. Reis' notion of "navigating a vessel in the air, independent of balloons, on the vacuum principle. This is a new idea founded upon an old error. The amount of force procured by Professor Magnus' method is just equal to the amount of force given by his fan-blowers. When air is blown through a tube it drives away the air before it, and this causes an inflow of surrounding air, which, coming from all sides, meets in front of the tube, forming there a cone of air, moving off in a straight line before the tube, and thus causing a partial vacuum inside the air cone, similar to that in the upmoving current in a thunder gust. The same phenomenon takes place in smoke-stacks. The smoke-stack depends for its draft upon the motion of the air over its outlet or top. This may be the result of a natural current over the stack, or by blowers. A current of air passing unobstructed by surrounding obstacles over the top of a smoke-stack, always induces a strong draft in the flue, whether the wind be north, south or west; but the fire does not burn as well with a south wind as with the others, because it throws into the fire more humidity and less oxygen than the others. I have only noticed the above dissemination of a "new idea" because the deductions imply the discovery of a law in nature to navigate a vessel in the air that is greater than the power used to induce the vacuum. The idea itself is an interesting one; it pertains to all manner of ventilation and currents, and is deserving of much thought, for it will explain various anomalies in flue drafts, water currents and air currents; but it will not serve the purpose of driving a vessel through the air, any more than the same amount of force applied to wings or flappers acting on the body of the air.

JOHN WISE.

Lancaster, Pa., Dec. 12, 1859.

CHEMISTRY OF TANNING.

MESSRS. EDITORS:—While reading an article on tanning (on page 384, present volume of the SCIENTIFIC AMERICAN), it appeared to me that the opinion expressed regarding the operation being purely chemical might be strengthened by an observation of the curious effect produced by electricity upon hides while in the "bait." If, during this part of the process, a thunder-storm occurs, the leather produced is invariably inferior in quality. The nature of the injury thus received is such that no eye can detect it; but when made up and put to use, the leather appears to want tenacity, and "gives out" prematurely. I will not undertake to say *how* the deterioration is produced; but it seems to me that if, while the hides and tannin are in process of combination, the simple presence of electricity in the surrounding atmosphere is capable of affecting the resultant product so seriously, the operation thus interfered with must be chemical and not mechanical.

A. F. O.

Albany, N. Y., Dec. 19, 1859.

GLASS-DRILLING.

MESSRS. EDITORS:—In reference to some receipts for drilling glass, recently published in the SCIENTIFIC AMERICAN, I would state that I take a common drill, harden and use it without drawing the temper, and keep the point wet with water. I have thus drilled a half-inch hole through glass one inch thick. It is more difficult to drill through window glass than that which is thicker. As regards another subject often brought before the notice of your readers, I would remark that water-wheels and machinery have the appearance of going faster when all is still around, or when it is so dark that no other objects are seen in motion. A steamer has the appearance of going faster on the river than when going at the same speed on the ocean.

L. W.

Waterbury, Conn., Dec. 12, 1859.

RAIN AND PAINT PHENOMENA.

MESSRS. EDITORS:—In No. 23, of the present volume of the SCIENTIFIC AMERICAN, is an article bearing the above caption; and I think the phenomena may be readily accounted for. The oil which had been used in the painting of the houses was probably rancid; and having an affinity for the carbonic acid in the atmosphere generated from decaying vegetable matter, resulting from the destruction at this time of year, of foliage &c. From the rapid corrosion in this case by oxygen in the oil assisted by carbonic acid, it is not to be wondered at that the paint changed to the seer and yellow ray. The drabs or neutrals are especially subject to weather stains.

The rain storm from north-east, which again changed the color held in solution chloride of sodium, from oceanic evaporation, necessarily re-bleached the paint.

New York, Dec. 19, 1859. E. F. B

THE CENTRAL PARK.—The Paris correspondent of the New York *Evening Post* writes that Mr. Olmstead, Superintendent of the Central Park, has been in that city for a few days on official business. He visited the Bois de Boulogne several times, and through the politeness of Mr. Phalen, had opportunities of studying it to every advantage. I think I may venture to say that he left in no respect discouraged by anything he saw or heard. He found the Central Park had many advantages which neither nature nor art had conferred upon the famous Parisian drive, while in respect to the improvements the New York work will, in many very important respects, bear a favorable comparison with any park upon the Continent. The roads of the Central Park are wider than the widest of the Bois de Boulogne, and they will be out of sight except when not immediately under foot; whereas in the Bois the eye is frequently offended with long white streaks of road, cutting up the distant lawn and destroying all the illusions so essential to broad landscape gardening. Then the Bois is not underdrained; the soil is very thin, the trees are not only for the most part of small size, but they are not thrifty, and never can be very handsome. In all these respects the Central Park has greatly the advantage. Mr. Olmstead left Paris with Mr. Parsons, of Flushing, L. I., to visit some nurseries and to make some purchases, of which the Park will bear abundant testimony another summer

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NOTES AND GOSSIP ON THE RECENT PROGRESS OF SCIENCE.

In these days of winter's cold, it is interesting to know that there are some specimens of animated nature that preserve an even temperature, though exposed continually to the most severe frosts. Professor Wyman recently stated to the Boston Society of Natural History, that during the last winter he had examined chrysalids of the common mud-wasp, and found that they were not frozen during the coldest weather. One morning, when the thermometer had been 18° below zero, and had risen 10°, they were found, upon examination, to be still unfrozen; and, when removed from their pupa cases, exhibited obvious muscular motions. The pupa preserved its usual transparency and flexibility; when crushed upon the surface upon which they rested, the fluids of this body became opaque, and instantly congealed. It is certainly a curious question, and one not a little difficult to answer, as to what is the source of heat which enables these pupa to preserve the temperature, when exposed to so low a degree of cold. The non-conductor by which they are surrounded consists of mud, and within this a tightly-woven but thin, silky cocoon. It would seem that so small a body, exposed to cold so intense, must have an internal source of heat.

Professor Wyman also stated that he had examined the eggs of the moth of the canker worm, and found their contents unfrozen, even in the depth of winter. We have here displayed a new and most interesting manifestation of Providence, in the providing, in some way to us as yet unknown, for the preservation and perpetuation of whole families of insects during the rigors of our northern winters.

Aluminum, the metal of which we have heard so much of during the past few years, does not appear to be about to realize the brilliant expectations which were formed at the time of its first successful production in quantity, by St. Clair Deville. In its pure state, it approaches somewhat to the color of silver; but it is found nearly impossible to free it from certain foreign matters which become alloyed with it during the process of production, and thus greatly impair its luster and whiteness. These substances are iron and silicium, which not only change its color, but greatly affect its durability. The specimens which attracted so much attention at the Universal Exposition of Industry in Paris, were found by M. Reynault, on analysis, to contain 6.50 per cent. of copper, 2.50 of iron, and 1.50 of silicium.

Yet, aluminum is one of the most wonderful of the productions of the mineral kingdom. Examine one of the little ingots which the Parisian chemists have manufactured. We see at once it is not silver; neither does it at all resemble tin, pewter or German silver. It seems rather like a mass of greyish steel, polished, but not burnished. It is hard, like steel, and there is nothing of the soft, unctuous feeling which is imparted by lead. You think it heavy, but are surprised to find, on lifting the ingot, that it is lighter than glass. This is its most wonderful property. A child might lift a mass larger than a pig of lead, and carry it with ease. Another curious property of aluminum is its non-susceptibility to oxydation. Articles manufactured from it do not tarnish, even though heated red-hot and exposed immediately to a current of oxygen.

Aluminum is now sold in London for about $15 an ounce, being nearly as costly as gold, but, in consequence of its small specific gravity, an immensely larger bulk is given in an ounce of aluminum than in an ounce of gold. When aluminum becomes cheap, its non-tarnishing property will bring it at once into varied and extensive use for many articles of domestic economy—tea utensils, spoons, knives and forks, door-knobs, &c. Verily, a millennium of house-keeping may not be far distant, for M. Deville has prophecied that it will ultimately be cheaper than silver. It is somewhat curious that the production of metallic aluminum should have remained so long unknown to chemists, since the process of its reduction is by no means complicated or difficult in the hands of an experienced operator, although expensive from the nature of the agents employed to effect the requisite chemical changes. Sir Humphrey Davy demonstrated its existence, and proved that the basis of our common clay was metallic, the same as in the case of potash, soda, lime, &c. Yet Sir Humphrey never saw pure metallic aluminum. It was first produced in appreciable quantities, some years since, by Wholer, the distinguished German chemist. He, however, neglected to follow up his researches, and it was not until 1853 that M. Deville, of Paris, produced it in sufficient quantities to make it no longer a chemical rarity.

Yet the discovery of aluminum was nearly stumbled upon some years since in New England, and that, too, in a very curious manner. The proprietors of a large glass-house were accustomed to use, for the manufacture of the common and coarser varieties of junk or green bottles, great quantities of wood-ashes. These, mixed with an additional quantity of alkali, were melted down in pots, subjected to the intense heat of the glass furnace, and from the fused mass the bottles were blown. Now, among the most expensive of the glass-house fixtures are these pots, which are carefully prepared of a peculiar clay, properly worked and tempered, and then burned. Rightly prepared, a glass melting-pot is almost unalterable under the action of the most intense heat, and will continue serviceable from three to seven, or even ten months. But in the glass-works in question, the pots, to the infinite annoyance of the proprietors and workmen, gave out almost immediately—uniformly at the bottom, and without any apparent cause. An examination showed the base of the pots to be penetrated through and through with minute holes, somewhat resembling a honey-comb, or a fragment of wood bored into by the *teredo*. For a long time all attempts to solve the mystery failed, but an explanation was at last obtained after a rigid scientific investigation.

The housewives, of whom the wood ashes are bought, are in the habit of throwing the sweepings of the floor into the fire. These sweepings invariably contain a greater or less number of pins, which, finding their way with the ashes into the melting-pot, became fused, and the melted product, by reason of a greater specific gravity, accumulated in the form of little globules at the bottom of the pot. Located here beneath the molten mass of silica and alkali, the fused brass was subjected to a most intense heat, and, at the same time, protected from the influence of the oxygen of the atmosphere. The circumstances all tended most powerfully to induce oxydation; and the little globules of brass, in default of obtaining it elsewhere, stole it from the alumina of the clay of which the pot was composed—thus necessarily reducing it (the clay, oxyd of aluminum) to the metal aluminum. This latter being set free immediately fused, alloyed with the remaining unoxydized brass, and, in turn, re-acted, until at last a hole was excavated through the bottom of the pots. The cause being once ascertained, the pins were removed from the ashes, and the trouble ceased.

The incident might have taught those concerned that there was nothing chemically impossible or difficult in effecting the production of aluminum, under proper circumstances, from the other substances with which it is ordinarily combined.

The two chemists above alluded to—Messrs. Wholer and Deville—who now stand in the front rank of the eminent scientific men of Europe, have recently succeeded in crystallizing boron, the earthy base of the well-known substance, borax. These crystals are said to possess a brilliance and a refractive power second only to the diamond, and, in point of hardness, are capable of scratching corrundum, which, next to the diamond, is the hardest substance known. The specimens which have been thus far exhibited to the French Academy are very small, and have a shade of red or yellow; but the color is believed to be accidental, and it is hoped that further experiments will result in the production of perfectly colorless crystals. This discovery foreshadows the production of a fictitious, though not valueless diamond, which the most experienced eye will be unable to distinguish from the genuine article.

GRAPHITE.—Professor B. C. Brodie, of Oxford, in a paper read before the Royal Society, "On the Atomic Weight of Graphite," arrives at the following results:—"Carbon in the form of graphite forms a system of peculiar compounds, different from any compounds of carbon yet known, and capable of being procured only from graphite; and graphite, within certain limits, functions as a distinct element, capable, indeed, of being converted, by certain process of oxydation, into carbonic acid, and thus identifies itself with the other forms of carbon, but having a distinct atomic weight, namely 33 (hydrogen = 1)."

TRIAL TRIP OF THE WINANS STEAMER.

The following extracts are from the letters of the Norfolk (Va.) correspondent of the *New York Herald*, who, under dates of Dec. 7th and 9th, states as follows:—

"The Winans steamship arrived here on Monday from a cruise, and is attracting general attention from our sight-seers. She made an excursion to Old Point Comfort yesterday, a distance of 14 miles, which she ran in 45 minutes. She went to sea this morning to test her sea-going qualities, and has exceeded all expectations. She appeared like a whale sporting on the surface of the troubled waters."

"This steamer put to sea yesterday during a gale of wind and a heavy sea of a kind particularly calculated to test her sea-going qualities. The result was satisfactory in the highest degree. This was the more confirmed from the fact that there was an opportunity of comparing her with two vessels of similar dimensions which accompanied her for that purpose, viz., the steamer *Young America*, of this port, and the wrecking schooner *Johnson*, of New York, as well as other vessels observed while under way, and particularly one of the Union line of steamships, of Philadelphia, which was fortunately met with during the run. The comparison in favor of the Winans steamer was most striking; in fact, under circumstances so highly calculated to produce heavy rolling and pitching, the undulations were so slight as scarcely to merit the name. Notwithstanding there were a considerable number of persons on board who were unaccustomed to the sea, not one of them experienced the slightest nausea or sea-sickness, which evidently would have been the case had they been on board of either of the other vessels. Another gratifying fact is that her speed did not seem to be impeded by the roughness of the sea, and the motion of her engines was as regular and uniform as in smooth water. It was also noticed that there was an entire absence of shocks which are experienced by all other vessels when running into a heavy head sea, and strange as it may seem, not a sea broke over her to prevent any part of the deck being occupied inside the railing."

The steadiness attributed to this vessel, in this case, contradicts all the views that have heretofore been expressed regarding her performance. We give the statement *verbatim*. The speed said to be attained is over 18½ miles per hour—extraordinary, if true.

HOW ACTORS ARE POISONED.—It was established by positive proof, at a recent legal prosecution before one of the Paris tribunals, that, unless the greatest circumspection is observed, theatrical performers run a great risk of poisoning themselves. A Parisian perfumer had long enjoyed the monopoly of furnishing the artists attached to the theaters of the capital with the various cosmetics used behind the footlights. Among these are preparations, white, black, red, &c., for painting the eyebrows, cheeks, and other portions of the countenance. An analysis of this theatrical perfumer's wares revealed that, instead of the innocuous substance which he should have employed in their fabrication, they were composed of carbonate of lead, mercury and other poisonous elements. The affair was brought to light through the serious illness of an actor at the Palais Royal theater, whose physician investigated the subject and ferretted out the truth. On the trial, many Parisian artists testified to having been, to a greater or less extent, victims of these dangerous cosmetics, which, in all probability, have been sold in New York as well as in Paris.

THE SKY AN INDICATION OF THE WEATHER.—The colors of the sky at particular times afford wonderfully good guidance. Not only does a rosy sunset presage fair weather, and a ruddy sunrise bad weather, but there are other tints which speak with equal clearness and accuracy. A bright yellow sky in the evening indicates wind; a pale yellow, wet, a neutral gray color constitutes a favorable sign in the evening, an unfavorable one in the morning. The clouds again are full of meaning in themself. If their forms are soft, undefined and feathery, the weather will be fine; if their edges are hard, sharp and definite, it will be foul. Generally speaking, any deep unusual hues betoken wind or rain, while the more quiet and delicate tints bespeak fair weather. These are simple maxims; and yet not so simple but what the British Board of Trade has thought fit to publish them for the use of seafaring men

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FOREIGN SCIENTIFIC AND MECHANICAL NEWS.

Safes for Treasure on Steamers.—The gold which was brought from Australia by the steamer *Royal Charter*, which was wrecked recently on the coast of England, was packed in small boxes in a special room, and as a consequence these boxes were all scattered in the sea when the ship broke in pieces. To avoid such a catastrophe in future Mr. Chubb, the inventor of the *unpickable* lock which was opened by the indomitable Hobbs, writes to the London papers, recommending that large fireproof safes be employed instead of the common bullion rooms, for containing treasure on board of steamers. Mr. Chubb is right; a large safe, occupying a space not exceeding four feet square on the floor, can hold five million dollars of gold, and be made so strong that it cannot be broken to pieces by the waves of the sea. A vessel wrecked with such a safe on board might have her hull smashed to pieces, but the safe would sink to the bottom and remain fixed, so as to retain all the treasure in one spot, and it could thus be easily fished up afterwards.

Strange Explosion.—A curious explosion recently took place at a brewery in Edinburgh, and the cause having been investigated by an insurance company, the testimony elicited the fact that the dust of the malt was ignited by a gas jet and the heated air rushed up the iron tubes of the grain elevators into a large close malleable iron receiver, where the air was compressed to such a high pressure that the receiver exploded with great violence, doing an immense amount of damage. The dust of malt is very inflammable, and the gas jet which set fire to it on this occasion was not enclosed in a globe. This should be a warning to all brewers and millers; they should be very careful to enclose all their lights. "An ounce of prevention is worth a tun of cure."

Unsinkable Ships.—A proposition has been made by Mr. C. Atherton, of London, naval constructor, to construct ships below the water line of such a solid material that although shot may penetrate through and through, it will support the vessel and not sink. Cork has been proposed for this purpose, but as it is inflammable and capable of being burned with red-hot shot, it is objected to, and some other uninflammable, unsinkable substance is wanted. We think that such a substance may be invented and that unsinkable vessels are not impossibilities.

Defective Cables.—A correspondent of the London *Mechanics' Magazine* attributes the loss of the *Royal Charter* to defective anchor cables. He states that the *Great Eastern* was exposed to the same storm, and her safety was mostly due to the excellent quality of her cables and anchors. He asserts that ship-owners bind down their captains in the equipment of their vessels, to cheap cables, the metal of which is mere rubbish, and that steamers generally are not provided with such good chains as sailing vessels, under the mistaken idea of the owners that they do not require such strong cables. This is a subject of vast importance to our steamship owners, as well as those of England. Nothing but the very best materials should ever be employed in the construction and equipment of vessels—steam and sailing—which navigate the ocean.

Uninflammable Fabrics.—The tungstate of soda is recommended by several chemists in London to be applied to linen clothes and all kinds of cotton apparel not worn next the skin, to render them uninflammable. It is stated that it is now applied regularly in the laundry of Queen Victoria for this purpose, and were it used generally we would never hear of accidents from the clothes of ladies and children taking fire. It is also recommended that the sulphate of ammonia be applied in manufactories to goods to render them uninflammable; also to wooden partitions and paper.

Indian River Navigation.—A system of steam navigation for the river Ganges is about being adopted, which is very similar to that practiced on the Hudson and several other American rivers. It consists in the employment of powerful tug steamers of light draft for towing barges laden with produce. The hull of the first of two steamers intended for such operations has lately been completed at Port Glasgow, Scotland, and it has been taken to Liverpool to get in her engines. These will be nominally of 250 horse power, but capable of working up to 1,000. This boat is of iron and made very strong and light. It is trussed beneath the deck by a framework of angle iron, and above deck by wrought-iron tubes. Its longitudinal strength is such that it will not be damaged although it may run aground, a circumstance which is of frequent occurrence in the Indies, where the rivers become very shoal during the drouths which occur periodically. The barges are only to draw two feet of water, but are to be very broad and carry 600 tuns of cargo each.

FLORAL INDICATIONS OF WEATHER CHANGES.—There are a great many plants that give indications of coming storms, or changes in the atmosphere. Several very common flowers close at night and open again in the morning. The scarlet pimpernel, shepherds' barometer or poor mans' weather-glass, is the best floral barometer; because not only does the flower never open on a rainy day, but, long before the shower comes, it is conscious of its approach, and closes up it petals. This peculiarity was noticed by Derham, in his "Physico-Theology;" by Lord Bacon, who calls it vinco-pipe; and by Leyden. Not only does the pimpernel shut up its blossoms during rainy and cloudy weather, but it is one of the best of clock flowers, opening its petals in our latitude at about 10 minutes past seven in the morning, and closing them a few minutes after two in the afternoon. Dr. Seeman, the naturalist of Kellet's Arctic expedition, mentions the regular closing of the flowers during the long day of an Arctic summer. He says: "Although the sun never sets while it lasts, the plants make no mistake about the time, when, if it be not night, it ought to be; but regularly as the evening hours approach, and when a midnight sun is several degrees above the horizon, they droop their leaves and sleep, even as they do at sunset in more favored climes."—*All The Year Round.*

A NEW SOURCE OF WEALTH.—We see by the Pittsburgh papers that there is considerable excitement in that region of the country respecting a subterranean reservoir of oil which has been recently discovered. Companies are engaged in digging wells to obtain the oil. When procured in its crude state it sells for 60 cents per gallon. It does not cost more to pump it up than 1 cent per gallon, and 9 cents more per gallon will pay for barrels and transportation to New York. The refined oil is sold at a much higher figure. This oil is petroleum, a bituminous substance, which is found floating on the water of springs. The excitement does not appear to be altogether speculative, though possibly that may have something to do with the published accounts. One singular fact is mentioned in connection with these oil pits. In many places in the valley of Oil Creek the ground is covered with pits, hundreds and thousands of them, evidently dug for the purpose of gathering oil, and at a period so remote that trees 250 years old are growing over them. The query is, by whom were these pits dug, and for what purpose was the oil gathered?

COLOR OF ARAB HORSES.—A writer in *Blackwood's Magazine*, speaking of horse-dealing in Syria, and of the color of Arab horses, says:—"Gray of various shades, bay, chestnut and brown are the ordinary, and it may almost be said the only, colors of Arab horses. The commonest of all colors is one which I recollect as being very frequent among the Arabs met in India, a dark, uniform, nutmeg gray. Light gray verging on white is neither rare nor peculiar to old horses. Next to gray in frequency comes bay and chestnut, both fine and rich in quality, and the latter so prized above all colors by the Arabs, that they have a saying that, if you ever hear of a horse performing any remarkable feat, you will be sure to find upon inquiry that he is a chestnut. Brown is not unfrequent, and in my register of horses brought from Anazeh, I find one black. But so rare is that color, that if I had merely trusted to my recollection, I should have said I never saw a black horse in the desert. Of other colors I saw none, except in the solitary instance, of a skewbald; and I cannot, at this moment, undertake to say that he was an Anazeh, or belonged to some of the tribes where the purity of the breed can less be depended on."

A TALL CABBAGE.—The people of Long Island are accustomed to boast of their large cabbages, but they are perfect pigmies in comparison with those in California. The San Andreas *Independent* states that Mr. Hepburn, of that place, has one in his garden which is 15 feet high, and instead of having only one head, like our eastern sort, it has no less than 60 heads upon it.

COLUMN OF INTERESTING VARIETIES.

The Commissioner of Patents has appointed Professor Jilson, of Columbia Collage, in the District of Columbia as librarian of the Patent Office, vice Dr. Turner, deceased.....Carlyle says:—"Experience is an excellent schoolmaster, but he does charge such dreadful high wages."".....In a steam cylinder where there is little or no compression after the closing of the eduction port, the sudden admission of steam upon the piston will cause the pencil of the indicator (where one is attached) to leap to a point considerably above that corresponding to the pressure of steam in the valve-box. That this result is partly caused by the impact of the steam, and not by the momentum alone of the pencil, has been proved by holding the finger firmly upon the pencil, when it was found that a positive blow was imparted, the degree of force being quite beyond anything which could have proceeded from the momentum of the small movable parts of the instrument.....Some of the springs oozing into the Northumberland coal-pit are charged with a fine impalpable pipe-clay, which is deposited wherever the water reaches. When the miners are at work, the fine black dust, disengaged by their tools, is carried by currents of air and deposited with the clay. These processes are so regular that sections of the stone thus formed present alternate black and light colored streaks, corresponding to each day of the week, broad pale layers being left on Sundays and holidays when the miners are not at work .....In the Cornish engines, the impact or percussion of the high-pressure steam suddenly admitted upon the large pistons has been found to "spring "the cylinder covers. These were formerly stiffened by stout ribs dividing their upper sides into segmental cells, but as the cover was thereby deprived of all elasticity it broke under the shock just mentioned, and the form and arrangement of these ribs have been changed in consequence .....In many cases there is a sudden increase of pressure in steam boilers immediately after starting the engine. This occurs, no doubt, from the ascent of water upon some of the plates which have been heated beyond their proper temperature, as well as from the sudden conversion of water into steam by being raised in a divided state into intimate contact with steam already superheated.....In some cases, Mr. Fongridge has found that where the upper plates of steam boiler furnaces had become uncovered, the heat communicated to and through the steam was such that the lagging on the outside of the boiler became charred. Mr. Longride has stated that this has occured whilst the pressure of the steam was at no time above 10 lb. per square inch.....Electricity exists upon the exterior surfaces only of bodies. If a silk bag, previously charged with electricity, be instantly turned inside out, the charge will pass through or around it, and will be still found upon the exterior surface. No electroscope placed within the bag will be affected.....Superheated steam will take up or convert water into ordinary steam.....Iron and steel, while heated to a cherry red, can no longer be magnetized, nor are they then susceptible to any magnetic influence whatever.....In driving piles by Nasmyth's steam pile-driver, working at from sixty to seventy blows per minute, the heads of the pile sometimes burst into flame and burn fiercely.....In Bury's locomotives, the apparent level of the water often rose 8 inches or 10 inches on starting, so great was the foaming consequent upon the limited steam room and the form of the boiler.....A turbine water-wheel of about 85-horse power, erected by M. Fourneyron at St. Blaise, in Baden, makes between 2,200 and 2,300 revolutions per minute. The head of water is 354 feet.....The exhaust pipe of stationary engines, where made of very thin sheet metal, have sometimes collapsed in consequence of the partial vacuum formed by the action of the steam ascending within .....The specific heat of iron is 1137, that of water being unity. The heat which would raise 1 lb. of water throunh any number of degrees of temperature would heat 9 lb. of iron to the same extent.....Instances are on record where cold water has been ejected into and allowed to remain in steam boilers, heated red hot, without producing explosion.....The greatest tensile strength of copper being 16 tuns per sqnare inch, its resistence to compression is said to be but three tuns to the square inch.....Mr. Dewrance found that the square heads of staybolts, when projecting two-and-a-half inches into locomotive fire-boxes, burned off to one-and-a-quarter inches, at which projection they remained.

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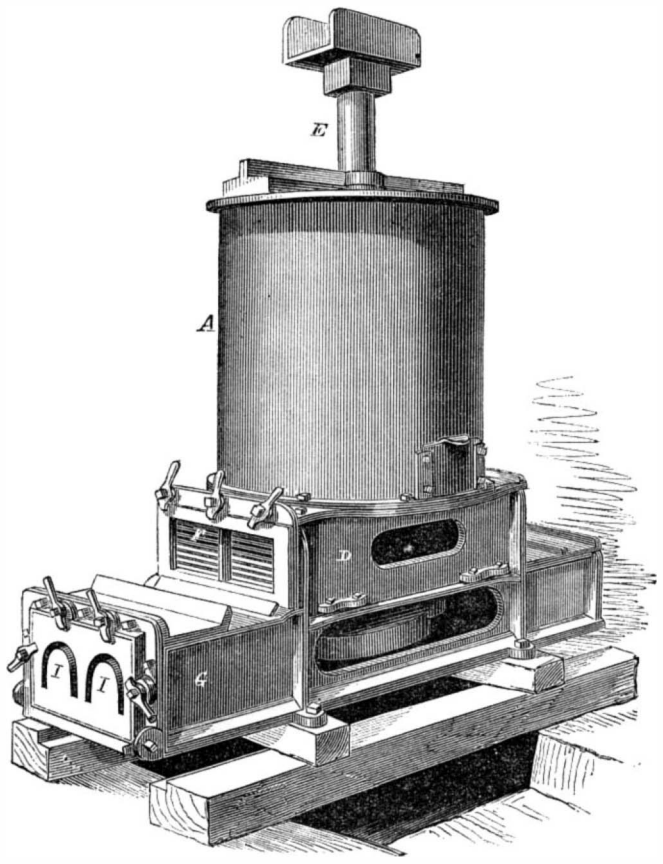
MACHINE FOR MAKING DRAIN TILES.

The great extension of underground draining is creating an enormous demand for drain tiles, and the demand, as usual, is calling forth improved modes of production. The annexed engraving illustrates a tile-making machine, of which we give the inventor's description and statement of advantages in his own words.

This machine performs the whole labor of grinding the clay and screening it to free it from gravel, and presses it into tile at the same operation; it being propelled by water, horse or steam power. The clay is suppied to the mill, A, and when ground by the power applied at the tip of the shaft, E, it passes to the box, D, and is pressed by a reciprocating plunger through the screen, F, is then dropped into the finishing box, G, and is pressed again through dies, I, on the carriages ready to be placed on drying boards. This machine makes all sizes and shapes from one and a half to twelve inches in diameter, and will make 1,200 2-inch tiles per hour. The machine is made of iron, and is very substantial and durable. All the working parts being visible and accessible, it is easy to change the dies; also to remove any foreign substance which may occur in the material.

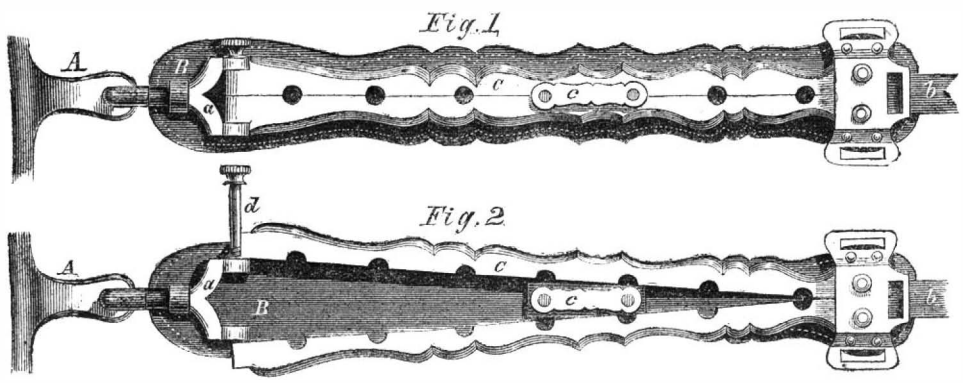


MACHINE FOR MAKING DRAIN TILES.

This machine is the invention of Caleb Winegar and Samuel M. Smith, of Union Springs, Cayuga county, N. Y., and is now owned by C. Winegar and A. Latourette, of Seneca county, N. Y. All orders for information pertaining to the business, addressed to A. Latourette, Waterloo, Seneca county, N. Y., will meet with prompt attention.

IMPROVED BUCKLE FOR TRACES.

The accompanying cuts illustrate an improved buckle for traces designed for highly ornamented plated harness.



ROESLER'S IMPROVED BUCKLE FOR TRACES.

A, represents a portion of the harness, to which the hook, *a*, of the trace is hooked. The hook is firmly fastened to the broad leather shield, B, which has secured at its other end the two halves of the metalic plate, C; these halves of the plate being pivoted at their ends so as to open as shown in Fig. 2; and connecting at the opposite ends with the hook by means of the bolt, *d*. The trace, *b*, has the plate, *c*, secured at its end by means of two pins which fit into the semi-circular recesses in the two halves of the plate, C, and are thus firmly held in place when the two holves of the plate, C, are brought together and fastened to the hook by the pin, *d*. The length of the trace is adjusted by opening apart the pieces of the plate, C, as shown in Fig. 2, and placing the plate, *e*, at any part of the plate, C, and then bringing the halves of the plate, C, together and fastening them in the manner described. It will be seen that this mode of adjusting the length of the trace is superior to the old plan in this respect; by the old method of slipping the trace a greater or less length through the buckle, a long, loose, flapping end was permitted to extend beyon l the buckle, giving an air of a want of snugness and finish to the whole harness, while, by this improved buckle, no such loose end is seen; but, on the contrary, the trace terminates with the harness, and, in place of the limber end flapping about the horse's shoulder, there is a long metallic plate, which may be either gilded or plated with silver, and thus made the most ornamental and elegant part of the harness.

The patent for this invention was granted May 23, 1859, to Adolph Roesler, of Warsaw, Ill., who may be addressed for further information in relation to it, or Bernard E. Myers, 335 Broadway, in this city.

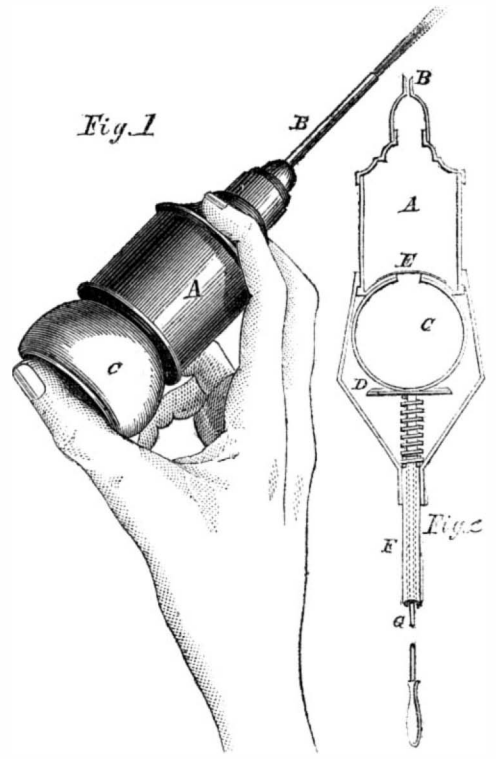
HOLLOW WALLS OF BUILDINGS.

It always affords us pleasure to witness useful ideas acting like wedges in splitting rocky prejudices, and opening up avenues for improvement and reform. This appears to have been the case produced upon our daily press, in reference to the above subject. The New York *Times*, of the 14th inst., contains a very useful article on this topic, in which hollow walls are advocated with zeal and a true sense of their utility. The non-conducting character of the air spaces in such walls is pointed out as a good arrangement for keeping the interior of houses dry and warm. On page 371, Vol. II., of the SCIENTIFIC AMERICAN, there is an able communication on this subject, by a practical brick-layer, in which the method of constructing such walls is set forth with great clearness. In this respect, it is more valuable than the article in the *Times*, and it would be well for builders, and all those intending to erect brick houses to give it that attention which it really deserves.

IMPROVED INSECT POWDER-BLOWER.

Powder used for the destruction of various insects is found to be most efficacious when injected into the cracks or crevices to which the insects retreat. The annexed cuts represent a simple little instrument for doing this in the easiest and most expeditious manner.

It consists simply of a cylindrical receptacle, A, for the powder, provided with a slender tube, B, at the top, and a round, air-tight india-rubber ball, C, at the bottom. The ball communicates with the receptacle at E, by a hole, which is covered with a fine gauze or cloth sieve to prevent the powder from passing into the ball. A metallic plate, D, is attached to the bottom of the ball, and, by pressing this plate suddenly, the air is forced through the receptacle and tube, carrying along with it a small portion of the powder, which is thus driven into any crevice to which the tube, B, may be applied. The tube is enlarged at its lower end, and fits tightly over the top of the receptacle, so that it may be removed to supply the latter with powder. For applying the powder to high shelves, the branches of trees, or other places inconvenient of access, the apparatus is attached to the top of a long tube, F, which has a rod, G, passing through it; this rod having a handle for forcing it up, and a spiral spring to return it to its place.



The two patents by which this invention is protected were issued to Peter Reynard and Victor Varin; one on the 20th of September, and the other on the 8th of November, 1859. Inquiries for further information may be addressed to Reynard & Co., 130 Fulton-street, this city.

LEAD COLIC PRODUCED BY CLARET.—L. A. C. Jules, an apothecary, 25 years of age, was admitted to the hospital, Aug. 3, 1859, laboring under the effects of lead poisioning, which he attributed to drinking claret at his boarding-house. He also had some obstruction to the biliary secretion, evidenced by a jaundiced appearance of the skin and conjunctivæ. While outside he had been treated by Dr Chicarini, of Bleeker-street, who treated him by chloroform, which has lately been tried with success at the New York Hospital by Dr. Griscom. This was continued for a short time only, as the patient was nearly convalescent under his former medical attendant. Rhubarb and blue pill, followed by seidlitz powder were administered for the affectation of the liver, under which treatment he got gradually better. On the 6th, some symptoms of suppression of urine appearing, he was ordered the compound fluid extract of Buchu, as prepared by Risley of this city, by the aid of which the unpleasant symptoms soon disappeared, and he left the hospital on the 7th, in a state of convalescence. In this case the blue line at the edge of the gums was very apparent, leaving no doubt on the doctor's mind as to the nature of the case. The wine was tested by the patient himself, and found impregnated.—*N. Y. Medical Press.*

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VOL. I., No. 26.....[NEW SERIES.].....*Fifteenth Year.*

NEW YORK, SATURDAY, DECEMBER 24, 1859.

VALEDICTORY FOR VOLUME I.

HIS is the last number of the first volume of our "new series;" and our friends will be pleased to learn that the costly experiment of enlarging the size of our paper, without increasing the price, is being attended with the most satisfactory success. We exchange with French journals of a character somewhat similar to that of the SCIENTIFIC AMERICAN, the price of which is *eight* times as much as that of our journal, in proportion to the amount of reading matter, though they have few or no illustrations. Where education is limited to a small class, the circulation of periodicals must be small, and the price must be high in order to sustain them; but, in this country of universal education, experience has shown that the true way to secure the support of a paper is to give it the greatest intrinsic value, to adapt it to the wants of the time, to kindle it with a spirit of life in accordance with the activity of our people, and then to put it at the very lowest possible price in order to give it a very wide circulation. This has been our plan, and experience is constantly teaching us the wisdom of the policy. It must be obvious to all that a journal in every way as well got up as the SCIENTIFIC AMERICAN cannot (at the terms at which it is published) yield much remuneration to its publishers, and can only be sustained by a very large circulation, which, we are happy to announce, it has already secured. While we thank our friends for their past exertions to procure new subscribers, we spur them on to further efforts to swell the list. Let each reader consider what neighbor would be most likely to appreciate our paper, and thus make us a "new year's present" of a new subscriber. Energy! activity! promptness! life!—these are the maxims of the day; and, while we remind our friends of them, we endeavor to act upon them ourselves. We have numerous competent minds constantly watching all departments of science and art, at home and abroad, for the first development of matters of interest to our readers. Rejecting all fiction, selecting only what is authentic and reliable, and culling from among this the most useful and interesting, we present our readers with the very cream and pith of what the human race is learning and doing. We are not surprised, though we are exceedingly gratified, at the appreciation of our labors. With the invaluable possession of all our past experience, with increased means and facilities, and with undiminished energies we are pressing forward in the race, more and more confident of seeing our subscription list soon swell to over *one hundred thousand* names, and more than ever determined to cause the SCIENTIFIC AMERICAN to be still recognized as the leading one of its class in all the world. In the meantime, we are well satisfied with the readers which we at present have, and we have no doubt that the same pleasant relation will subsist between us which have been manifested hitherto. Never had a paper warmer friends, and never were they more fully appreciated. As you, kind friends, gather around your Christmas fires, with hearts full of gratitude for all the blessings which you enjoy, and especially for the multitude of comforts, conveniences, and luxuries of life with which the genius of our inventors has surrounded you, we heartly wish you all—a "Merry Christmas, and a Happy New Year!"

A HINT IN REGARD TO STEAM PIPES AND FURNACES.

All men have observed that a northwest wind in this region generally brings clear weather; but the cause of this may not be so universally known, though it is fully ascertained. It results from that property of the atmospere which produces so many phenomena of the weather, its property of absorbing and retaining more water when it is warm than when it is cold. A northwest wind comes to us from the frozen regions beyond Lake Superior, where the temperature in the winter ranges from 40° to 60° below zero, and where the air has consequently had most of its moisture squeezed out of it; when it reaches the eastern edge of the continent, cold as it is, it is becoming warmer, and its capacity for water is increasing; far from depositing any moisture as rain, snow, or hail, it eagerly drinks in every particle with which it comes in contact; in other words it is a very drying wind. As a general rule, any wind blowing from the North to the South is a dry wind, and causes clear weather, while a wind blowing in the opposite direction produces clouds and rain. There are, however, many exceptions to this; a northeast wind along the western shores of the Atlantic, comes from the warm waters of the gulf stream, which have saturaced it with water, and, on reaching the land, its temperature is reduced, though it is moving southerly, and a portion of its water is deposited in the form of rain or snow. On the other hand, as the temperature in summer is nearly or quite as high in New York as it is in Virginia, a southwest wind, as it moves northerly, is not cooled, and it is consequently frequently accompanied with clear weather.

An able and learned French writer, assuming that the Americans are less healthy and robust than Europeans, discovers a sufficient explanation of the fact in the circumstance that we live on the east side of our continent, and the Europeans on the west side of theirs. the Americans consequently being compelled, as the prevailing winds are from the West, to breathe a dry atmosphere, while that which Europeans breathe is properly supplied with moisture. The human lungs and skin seem to be adapted to air containing a suitable supply of aqueous vapor, and when this is diminished considerably these viscera suffer in consequence. The rosy cheeks and redundant health of the English people is no doubt principally owing to the moist atmosphere in which they live, and the proverbial healthiness of sailors, and the inhabitants of small islands, is to be attributed to the same cause.

Now if our winter air, already too dry, is heated from a temperature of 20° or 30° to 65° or 70°, its capacity for moisture is enormously increased, and it sucks in every drop that it touches; it absorbs all that it possibly can from the skin, and comes loaded with it in every breath from the lungs. Furnaces and steam pipes are exceedingly unhealthy, unless ample provision is made for supplying the air with moisture. Since these modes of heating houses have become so fashionable, their effects may be seen in the countenances of large numbers of our population; the first sign that the poison is at work, is a dark ring under the eyes; then follows a sallow color of the whole skin, generally accompanied by a loss of appetite and other symptoms of a disease of the liver, with dyspepsia and general prostration of the system. Or, in persons of a different temperament the effect is felt in a greater sensitiveness of the cold, and greater liability to take cold, especially to cough, followed in more cases than would be supposed, by consumption

In constructing steam pipes and furnaces, therefore, provision should be made for an *abundant* supply of moisture to the air. In cases of steam pipes this is easily done by inserting a stop-cock, and allowing the steam to escape directly into the room; with furnaces, broad pans should be kept as near the fire as possible, and kept carefully supplied with water.

OIL FUEL FOR STEAMERS.

A manufacturer of coal oil has suggested to us the employment of crude distilled material as a fuel for boilers, more especially under those in steamships. The idea is far from being preposterous; it is founded on rational data. The simple question at issue between the use of coal and oil as fuel, either on steamships or under any kind of boiler, is one of economy entirely; and with proper appliances (some of which have yet to be invented) the balance, we believe, will preponderate in favor of the oil. The manufacturer to whom we have alluded informs us that such oil can be made at the mines for eight cents per gallon, and may be delivered on shipboard for ten cents. According to Professor Eaton not less than 140 gallons of crude oil have been obtained from one tun of Breckenridge coal, which, at eight cents per gallon, would yield $11.20 for the oil, but even at one-half this yield, the profits would be very large at mines, where the coal can be obtained for $1 per tun. The question, however, naturally arises:—How do oil and coal bear a comparison in ultimate expenditure, when used for fuel? At the first glance the economy is altogether in favor of coal, because the price of a tun at $5 can only purchase 50 gallons of oil at ten cents each, and as a gallon only weighs nine pounds, if we allow 10 per cent for ashes in the coals, a tun is still about 4½ times heavier than 50 gallons of oil. We have not been able to obtain a correct analysis of the crude oil, but it may be perfectly safe to set down each pound of it as containing twice the amount of hydrogen that is in a pound of coal, and that it is capable of generating twice the amount of steam, at the very lowest estimate, when burned under the same circumstances. But when burned under the most perfect arrangements it should generate 4 times the amount of steam, because one pound of hydrogen burned favorably will raise 250 pounds of water to 180° Fah., while one pound of coal will raise only 55½ pounds of water to the same temperature. It may be safe, however, to set down the oil as only possessing twice the steam-raising power of coal, which would bring the price of 50 gallons at 10 cents each, equal to half a tun of coal at $5. But there are other considerations in favor of oil which will elevate it higher in the economic comparison. In burning coal in steamships a great number of firemen require to be employed; some are continually feeding the furnaces, while others are engaged in wheeling the lumps from the bunkers and breaking them into the proper size. With oil as a fuel it may be kept in large tanks situated slightly above the level of the furnaces and conveyed in tubes through innumerable minute perforations in soapstone or fire-brick under the boilers, and there burned in the most perfect manner—being fed in by simply turning the cock of the supply pipe. In this manner two firemen will effect the same objects as a dozen feeding in coal to the furnaces. In burning coal also, there is a great waste of heat when the doors of the furnaces are opened to put on a fresh supply, by volumes of cold air being drawn under the boilers. No furnace doors require to be opened in using oil; the amount of it as fuel can be regulated by the simple turning of a cock, and as it forms no ashes the draft of air can be regulated in the most perfect manner to produce complete combustion and prevent a waste in this respect which always attends the use of coal in most boilers. As one half the weight of coal will only be allotted, another saving will be effected in the space required for the oil stowage, and therefore one half the room required for this purpose may be devoted to useful paying cargo. In loading up with oil one half the expense may also be saved for labor, as oil can be run down into the tanks by its own gravity. On the whole, it appears to us that cheap coal oil may be used as a substitute for coal, and a saving of at least 20 per cent effected, or $200 in a voyage from New York to Liverpool. An objection might be urged against its use for this purpose on account of its pungent odor, but this, we think, may be obviated by judicious arrangements, and a still greater saving effected than we have yet hinted at. The field at least, is one open for experiment and promises to yield profitable returns both as it relates to the invention of improved arrangements for burning and using the oil as a fuel.

BINDING.—We are having made a large quantity of very handsome covers for the first volume of the new series of the SCIENTIFIC AMERICAN; they will be ready for delivery about the 1st of January. The designs for ornamenting the covers were executed expressly for this publication, and are chaste and appropriate. The style of the binding we have changed entirely from our former designs, and while the price charged will not be so great, the binding will be superior and sufficiently ornamented for a parlor table or a New Year's gift. The prices we shall charge for binding will merely cover the cost, so as to induce our patrons to send their sheets for binding, or to send to us for the covers, and then have them bound in their own neighborhood, so that a uniformity of style and quality may prevail throughout. Our prices will be as follows:—For binding, muslin, 50 cents; for covers, sent by express or delivered at the office, 40 cents; for covers sent by mail, 50 cents.

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ADDRESS TO COTEMPORARY EDITORS.

Since we launched our humble sheet, in 1845, we have never been without thousands of warm friends among the editorial fraternity, who have often made our hearts glad in trying hours, when, but for the friendly aid extended to our efforts, we might have been so much discouraged as to relinquish the great object for which we labor. When we enlarged the SCIENTIFIC AMERICAN, on the 1st of July last, you, gentlemen, evinced your good-will by such evidences as are always appreciated by the fraternity to which we all belong. We have steadily pursued our legitimate calling, leaving exciting political and religious discussions wholly out of view as not belonging to our sphere of duty. This course we mean to still pursue; we hope to make our journal not only welcome to every editorial *sanctum*, but also to every fireside, as a safe instructor in the fields of science, invention and discovery. We wish to be on the best of terms with you all, and do not design, by any criticism we may offer, to personally offend a single individual; yet upon all such subjects as properly come under our purview, we shall speak our opinions plainly, and if we hit the cherished notions of some, we cannot help it; they must endeavor to separate themselves, personally, from their pet theories. We remind you that this is the last number of the first volume of our new series; and if you will be so kind as to hint this fact to your readers, we shall feel truly and deeply obliged. If you do not thus honor us, however, we shall not make it a *casus belli*.

OUR CONTINENTAL TELEGRAPH.

A great American telegraphic enterprise is now in the course of being carried out for uniting the Atlantic seaboard cities with those on the shores of the Pacific, then finally to stretch north, cross the Straits by a submarine cable to Asia, thence down through the Russian dominions into northern Europe. Parties are now engaged in constructing the line on the mail route between St. Louis (in Missouri) and San Francisco (in California), and about 300 miles are completed at each end. The New York Associated Press, in connection with that of other cities and two papers in California, have made arrangement for the conveyance of important news, semi-weekly, to and from California, between the telegraph stations, by the overland mail. When the California mail arrives at the Springfield station, in Missouri, the wires will be connected through to New York *via* St. Louis and Buffalo, a distance of upwards of 1,500 miles, and the news will be instantly transmitted through the agency of the Hicks Repeater—a new device by which land lines may be worked in a single circuit—and given to the public through all the leading journals of the country, in the same manner and to about the same extent as the public have been served with European news from Halifax.

NEW MODES OF MAKING BREAD

Some of our English scientific cotemporaries have recently published a paper on the above subject, describing what is called "a new method of making bread," which is now practised in several places in Great Britain. The process, as described, consists in charging water with carbonic acid gas in a tight vessel, then introducing the flour, and kneading it with the aereated water; after which the dough is cut into pieces of loaf-size, and baked in an oven. Raised bread can be made in this manner with very great rapidity, and by a continuous process; whereas, by the common method, the flour has to undergo fermentation, and this action involves a considerable period of time to complete. By the fermenting system a portion of the carbon of the flour also passes off in the condition of a gas; and thus, with the tediousness of the old process, and the loss of some of the flour material, much has been said in favor of the *new* method, as it involves no such loss. We have been informed that it is in contemplation to organize a company in this city for the purpose of manufacturing such bread. We wish those who may engage in it perfect success, but we must state here that bread made in this manner is nothing new, either upon a small or large scale. On page 129, Vol. VI., SCIENTIFIC AMERICAN, the machinery is illustrated and the process described for making bread in a similar manner to that now proposed; but such a dietary material can never take the place of common leavened bread. It is so different in its taste and chemical character that it will not be used as a substitute. There is a small loss of carbon by the fermentation of dough, but the chemical change produced in the starch generates some grape sugar, which imparts to leavened bread that palatable, sweet taste which is never associated with mere effervesced or *raised bread*—all of which has a cracker taste, which soon palls upon the palate.

The origin of leavened bread is unknown; we give the credit of this invention to Mother Eve, and ever since she baked loaves for Father Adam, this kind of bread has been prefered to all others by civilized peoples. It is our opinion that, although loaves raised by gas may be manufactured at somewhat less expense than fermented bread, they never can supersede it. In the use of machinery for kneading, and in coal as a substitute for wood fuel in bakers' ovens; also, in machinery performing other operations in bakeries, there have been great advances made during the past ten years; but in the chemistry of bread-making, so far as we know, there has been no improvement for centuries. Several practical bakers have informed us that there is great room for improvement in this department, but not by substituting effervescence for fermentation.

WEEKLY SUMMARY OF INVENTIONS

The following inventions are among the most useful improvements patented this week. For the claims to these inventions the reader is referred to the official list on another page:—

STEAM PLOW.

This invention relates to a novel way of attaching or connecting a gang of plows to a traction engine, whereby the plows, in case of meeting with any obstruction and their progress being materially resisted, are automatically detached from the engine as the latter proceeds, and all derangement of parts and breakage, which would otherwise occur, prevented. The invention also relates to a novel arrangement of the plow frame, its connection with the plows and engine, whereby the plows, which are connected in pairs, may conform to the inequalities of the ground, each pair independently of the others, and the frame admitting of being so actuated as to incline the plows and facilitate, when necessary, their being elevated above the surface of the ground. The invention further relates to a peculiar mechanism employed for elevating the plow frame, whereby the latter may be actuated so as to incline the plows and the mechanism stopped automatically when the frame and plows are sufficiently elevated. The credit of this invention is due to J. W. Fawkes, of Christiana, Pa.; the plow will be found illustrated in No. 11, present volume of the SCIENTIFIC AMERICAN.

FIRE-KINDLERS.

The improvement of Mrs. Bellinger, of Mohawk, N.Y., relates to self-kindling blocks for fires; these are ignited like common friction-matches. The new composition now patented always insures the quick ignition of the materials, and preserves them from being affected by moisture in the atmosphere, thus rendering them well adapted for transportation to distant places, and for long keeping. Such fire-kindling agencies are now become almost a general domestic necessity; they are very convenient and useful. A previous patent secured by Mrs. Bellinger on fire-kindlers was pirated by several parties. Such persons will not be trifled with, should they make like attempts in this case. These kindlers and friction-matches are manufactured at Mohawk, N. Y., at the works of Mrs. Bellinger, and they are transported to this city to the wholesale agent, Isaac S. Clough, Pearl-street, New York.

SHINGLE MACHINE

This invention relates to an improvement in that class of shingle machines in which the shingle is rived from the bolt with parallel sides and then shaved or planed in taper form. The object of this invention is to obtain a simple machine for the intended purpose, and one that may be very readily manipulated by a person of ordinary tact or ability The invention consists in the employment of a reciprocating bed with a riving knife attached and connected with planers and other necessary parts, whereby the riving and planing or shaving operations are performed simultaneously and automatically. The inventor of this improvement is E. R Morrison, of Brooklyn. N. Y., who has assigned his entire interest to S. C. Hills, 12 Platt-street, this city.

CARRIAGE WHEELS.

This invention consists in connecting with, or securing the spokes into the fellies, in such a manner that they will be less liable to become loose or break off in the fellies than by the present mode. It also consists in a novel manner of securing the tire upon the wheel so that it will be effectually prevented from slipping off, and so that the tire will not be impaired in strength by drilling holes through it for the admission of bolts, as is at present resorted to. It also consists in welding upon the inside of the tire, plates of suitable thickness which overlap the joints of the fellies, and which have female screw threads cut into them for receiving the ends of the bolts which secure the fellies and tire rigidly together at these points, thus adding greatly to the strength and durability of the wheel. This improvement was designed by Joel Y. Schelly, of Hereford, Pa.

CANDLE MOLD.

The object of this invention is to facilitate the removal of the candle from the mold and prevent the inconvenience which frequently results from the "sticking" in the molds heretofore commonly employed, and to this end, the nature of the invention consists in constructing the mold of two tubes one fitted within the other, and with a "tip" of elastic or yielding material, the outer tube being rigid and as much larger than the candle as to admit within it the inner one, whose interior is of the desired size of the exterior of the candle, and which is made with a longitudinal slit and to possess such elasticity that when not confined within the outer one to such a degree as to keep the edges of its slit close together, it will expand and release the candle which has been molded in it, and the tip being fitted into the inner tube. The credit of this contrivance is due to H. Halvorson, of Cambridge, Mass.

NEEDLE WRAPPERS.

This invention consists in a very simple improvement in the kind of wrappers in which needles are ordinarily sold, by which the needles are enabled to be taken out one or more at a time, as required for use, without unfolding the wrapper to such an extent as to run any risk of dropping them out, and without the necessity of handling any one of them but that or those desired to be taken out, and so rendering them liable to rust. The inventor of this improvement is Robert Crowley, of this city.

MOWING-MACHINE.

This invention consists in connecting the cutter-bar to the frame of the mowing-machine, by means of braces which are hinged to the frame in such way that the finger and cutter-bar are thrown to the side of the machine parallel with the face of the driving-wheels, or in other words, that the cutter-bar may be placed in a horizontal position, at right angles to that which it assumes in cutting, for the facility of transportation from field to field, or when the machine is not to be used for mowing purposes. This improvement was designed by L. G. Kniffen, of North Salem, N. Y.

BEEHIVE.

This invention relates to an inprovement in that class of beehives which are provided with movable frames to support the combs. The object of the invention is to render the frames more accessible than hitherto, and also capable of being manipulated or adjusted with much greater facility so as to admit of the combs being thoroughly examined and renewed if necessary with great celerity. The invention also has for its object the varying of the capacity of this hive to suit the size of the colony, so that the temperature of the former may be kept in a proper even state, favorable to its occupants. This invention further has for its object an economical means for admitting of the adjustment or manipulation of the hive necessary for the examination of its contents and the operating or working therewith. This device has been patented to T. S. Underhill, St. Johnsville, N. Y.

WHEEL VEHICLES.

This invention relates to a novel mode of attaching the front bolster of the vehicle to the front axle, whereby a positive or rigid attachment of the thills or draught pole to the front axle is obtained, and all unnecessary play and rattle hitherto consequent on said attachment avoided, and a more durable and desirable vehicle secured. The patentee of this invention is A. R. Bartram, of Fairfield, Conn.

BOILER PATENT.—The Examiner, Dr. King, has reported in favor of the extension of Montgomery's boiler patent, granted Dec. 26, 1845. At the time of going to press, the Commissioner had not decided the case. This is an important patent.

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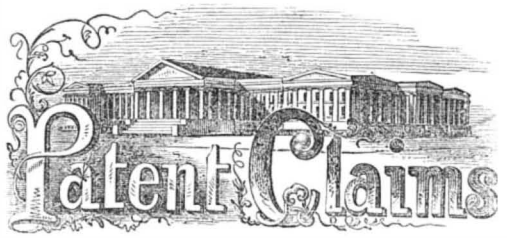
OUR TITLE PAGE AND INDEX.

We invite the attention of our readers to the beautiful title page printed on this number of the SCIENTIFIC AMERICAN. It was designed by A. Lumley, and engraved by R. Ten Eyck, whose skill in the art is so well attested in our columns every week. As a specimen of engraving on wood, and as a felicitous design, we doubt if a more superb thing of the kind was ever published. The center of the page is adorned by the figure of Minerva, expounding the laws of natural philosophy. In the upper view on the left are to be seen specimens of the unrivaled steamboats which ply on Long Island Sound and the Hudson river, and an ocean steamship; while on the right are shown those floating palaces of our western rivers, which furnish cheap and comfortable modes of transit. Below there is represented a perfectly correct view of the interior of the principal office of the Scientific American Home and Foreign Patent Agency, showing the various examiners, draughtsmen and clerks engaged in their professional duties. On the right of this interior view is represented a portion of the United States Patent Office at Washington, while on the left is shown an exterior view of the SCIENTIFIC AMERICAN Office, Park Building, this city.

The Index which we publish this week will, we doubt not, be highly valued by all those readers who have preserved their numbers for binding. As the first volume of the "new series" of the SCIENTIFIC AMERICAN contains about double the amount of letter-press given in any of its predecessors, within the same space of time, and as many attractive and valuable features of novelty are embraced in the reading matter, we deemed it incumbent on us to correspondingly enlarge and otherwise improve (by sub-divisions) the list of contents, which will be found more ample and comprehensive than any we ever previously published, and reflects much credit upon S. F. Cohen, our careful and competent proof-reader, who collated the same.

Next week we shall furnish our readers with another full page engraving of over twenty-five practical working machines, illustrating almost every department of mechanism and engineering. Thus brilliantly do we close the first, and shall inaugurate the second, volume of the new series.



ISSUED FROM THE UNITED STATES PATENT OFFICE

FOR THE WEEK ENDING DECEMBER 13, 1859.

[Reported Officially for the SCIENTIFIC AMERICAN.]

*** Pamphlets giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

26,403.—Luther Adams, of Blanchester, Ohio, for an Improvement in Car Couplings:

I claim the combination and arrangement of the latch, c f, spring, b, and plates, h h', when constructed and made to operate substantially as described for the purposes set forth.

26,404.—Peter B. Baker, of Wall Hill, Miss., for an Improvement in Cotton-seed Planters:

I claim the arrangement of the teeth, b b, in front of the drill-opener, C, and the scraper, G, secured upon the spring runners or shoes, E E, in combination with the seed drum, D, substantially in the manner and for the purpose specified.

26,405.—Nelson Barnum, of St. Louis, Mo., for an Improved Sash-fastener:

I claim the lever, H, the adjustable connection, G, and the springs, J and F, and bolt, I, or their equivalents, in combination with the yielding strip, B, for the purpose specified.

26,406.—A. R. Bartram, of Redding, Conn., for an Improvement in Running Gear of Vehicles:

I claim attaching the front axle, A, to the bolster, B, by means of the sleeves, b b, fitted loosely on the bolster and connected with the bar, C, which is attached to a circle-plate or any suitable swivel connection, between the said bar and axle—when said parts, substantially thus arranged, are used in connection with thills or a draft pole attached rigidly to the axle, A, for the purpose set forth.

26,407.—Alexander Beckers, of New York City, for an Improved Double Eye-piece for Optical Instruments:

I claim connecting a stereoscope or other optical instrument with double eye tubes, sight tubes, or eye pieces, each of which being shaped or turned of one piece in the form of an obliquely-intersected and molded hollow cylinder, substantially in the manner and for the purposes as described.

26,408.—Elizabeth Bellinger, of Mohawk, N. Y., for an Improved Composition for Kindling Fire:

I claim the inflammable gum paste composed of Kaurie gum, camphor and wax in about the proportions stated, when combined with friction-match paste, placed on kindlers for fires, in the manner and for the purposes set forth.

26,409.—John H. Birdsell, of West Henrietta, N. Y., for an Improvement for Bolting and Cleaning Clover Seed:

I claim, first, Operating the bolts, A A, so as to impart to them an oblique alternately rising and falling motion, by means of the double crank, D E, guide rods, F F, arms, G H, and connecting rods, B B, or their equivalents, in the manner and for the purposes set forth: it being understood that I claim the above only when applied to bolting clover seed.

Second, I claim arranging a trough, I, provided with endless conveyors, J, as set forth, for the purpose of returning the unhulled seed or taillings to be again submitted to the operation of hulling, as described.

[This invention consists in giving the two bolts, when the machine is in operation, an oblique alternating motion, so that they will alternately rise and fall, keeping at the same time always parallel to each other, for the purpose of more effectually separating the clover pods from the straw by giving to it a dropping motion, while at the same time it is propelled to the rear of the machine. It further consists in providing an endless conveyor so arranged that it will convey the seed which have not been effectually hulled back again to be submitted to the process, for the purpose of more thoroughly freeing it of its hulls.]

26,410.—William Blessing, of Jeffersonville, Ohio, for an Improvement in Seed-planters:

I claim the arrangement of the top portion of the distributor made with a semi-lunar opening and the recess under the covered portion of the said top, when the periphery of the top is made with the chaff openings, H, on either side of the reciprocating seed bar so that said bar, by its reciprocating action shall work out the chaff through the passages, H H, on either side of the seed bar and thus prevent choking the distributor.

26,411.—Jeremy W. Bliss, of Hartford, Conn., for an Improved Striking Apparatus for Gongs:

I claim, first, Arranging the striking mechanism of a bell substantially within the hollow of the bell, when the wire which actuates that mechanism moves in lines parallel to the axis of the bell or nearly so, as described.

And lastly I claim a rock-shaft arm arranged with reference to the bell, substantially as described, in combination with a slide, a swing catch, and a hammer, and hammer wire and proper springs; the whole constituting a striking apparatus, substantially as herein set forth.

26,412.—John Broughton, of New York City, for an Improvement in Grinding Mills:

I claim, first, The double and reverse-acting conical grinding surfaces, B F, constructed and operated substantially as herein set forth.

Second, In combination with a revolving grinder and hollow case or drum, A, I claim the wings or fan blades, J, operating substantially as and for the purpose set forth

[This invention relates to certain improvements in metallic grinding mills, the class formed of a cone or frustum of a cone revolving within a co-centric and stationary shell. The object is to prevent the clogging and consequent heating of the mill, and at the same time obtain a perfect and rapid grinding operation with a very simple and economical arrangement of parts.]

26,413.—Peter M. Brown, of Carrollton, Ill., for an Improvement in Portable Fences:

I claim giving such a shape to the slots at each end of the sections of my improved fence that the said sections can be securely interlocked with each other by means of supporting posts of the within described shape, in such a manner that the said sections can be either lengthened or shortened when they are put up for use, substantially as set forth.

26,414.—Isaac Y. Chubbuck, of Roxbury, Mass., for an Improvement in Fan Governors for Steam-engines:

I claim combining the main spindle, C, of the fan governor with the stem or spindle, B, of the valve, by means of a toothed arc formed upon or attached to the extremity of the crank arm which carries the fan and a toothed sector upon the valve stem, the said crank arm being attached to a sleeve fitted to the spindle, C, and the whole being otherwise arranged substantially as described.

[This invention consists in a novel mode of combining the spindle of a fan governor with the stem of the regulating valve, whereby the governor and valve are brought together in a very compact form, without arranging the governor upon the valve spindle, and thereby tending to draw the said spindle out of truth and so interfering with the proper operation of the valve.]

26,415.—Hezekiah Conant, of Willimantic, Conn., for an Improvement in Machines for Winding Thread on Spools. Patented in England June 22, 1859:

I claim, first, The combination, substantially in the manner set forth, of a traverse changer with right and left hand screws, and with nuts which are alternately in gear with such screws; the combination operating as a whole substantially in the manner and for the purpose described.

Second, I claim a traverse changer provided with successive steps or teeth, substantially such as is before described, and acting upon lips as set forth.

Third, I claim a stop motion, substantially such as is described, for causing the machine to come to rest when a spool is filled, in combination with automatic apparatus, substantially such as set forth, for regulating the length of motion and change of direction of motion, of a guide through which the thread is delivered on to a bobbin or spool.

Fourth, I claim adjustable lips, substantially such as set forth, in combination with a traverse changer, whereby spools of different lengths may be wound by the use of the same traverse changer.

Fifth, I claim mounting the presser and thread guide directly upon or attaching it firmly to the traverse rod, as before described, whereby the machine is cheapened and performs its work more accurately.

And lastly, In combination with apparatus substantially such as described, for governing automatically the motions of a thread guide, I claim a tension apparatus and stop motion which arrests the motion of a machine when a thread breaks, substantially by the mode of operation set forth.

26,416.—John B. Cornell, of New York City, for an Improvement in Sash Weights:

I claim, as a new article of manufacture, my improved metallic sash-weight, the peculiarity of which consists in its having a series of annular grooves formed at suitable distances from each other, in the lower portion of said sash-weight, for the purpose set forth.

26,417.—Thos. R. Crosby, of Newark, N. J., for an Improved Machine for Wiring Blind Rods:

I claim, first, The use, in wiring machines, of the yielding mouth to hold the wire when being driven and formed, substantially as described.

Second, I claim the use of the adjustable slide, K, substantially in the manner and for the purposes described.

Third, I claim in said machines the use of the dog, V, in the end of the arm, E, substantially in the manner and for the purposes described.

Fourth, I claim the combination together of the driver, O, and the yielding mouth formed by the rack, D, and plate, I, substantially as described.

26,418.—R. Crowley, of New York City, for an Improvement in Needle Wrappers:

I claim the incision of the wrapper, as shown at d d, so as to expose the heads of the needles and produce a covering or flap, B, of the form shown, or equivalent form, as and for the purposes set forth and described.

26,419.—Jonathan Cutler, of Chicopee, Mass., for an Improved Machine for Making Clasps:

I claim first, The sliding former, A, and the vibrating lever, B, in combination with the die and punches, in the manner described.

Second, The reciprocating ring, C, to actuate the slide former, A, in combination with the revolving cam, D, and lever arm, I, and pin, M.

Third, The center spring pin, W, to press the blank down through the die plate on the forming bed, Y, in the manner described.

Fourth, I claim the whole arrangement in combination, as an organized automatic machine, in the manner and for the purpose specified, substantially as set forth.

26,420.—O. H. Dennis, of Altona, Ill., for an Improvement in Seeding-machines:

I claim the combination and arrangement of the cylinder, G, of circular cutters, l l, with the cultivating and opening teeth, c c, and with the sowing cylinder, H, substantially in the manner and for the purposes set forth.

I also claim, in combination with the above, the arrangement of the loosely hinged harrows, N N, in relation to each other, and to the frame of the machine, and in combination with the arms, P P, rack-shaft, O, lever, Q, and catch, R, substantially as specified.

26,421.—D. S. Fancher, of Logansport, Ind., for an Improvement in Stone-loading Wagons:

I claim, first, The inclined frame or bed, A', and the hinged drop, B, in combination with the friction rollers, c c, and the windlass, a b b, for the purpose set forth.

Second, I claim the receiving table, A, in combination with the clamps, E E D, substantially as described and for the purpose set forth.

26,422.—J. W. Fawkes, of Christiana, Pa., for an Improvement in Steam Plows:

I claim, first, The arrangement of the clutch, r, levers, M N, rod O, lever, b', and button or projection, c', on the chain, F, whereby the chains, F F, are wound on the pulleys, e e, of the shaft, E, and stopped automatically at the proper time for the purposes set forth.

Second, In combination with the above, the brake, R, and pawl, d, when applied to the machine to operate simultaneously, as and for the purpose described.

26,423.—Thos. B. Fogarty, of Charleston, S. C., for an Improvement in Gas Meters:

I claim, first, The combination with the water reservoir, B, and the revolving measuring drum, H, of an inclined feed wheel, E, substantially as and for the purposes set forth.

Second, The arrangement of the overflow pipe, K, in combination with the water reservoir, meter chamber, and dry well, L, and pipe, N, in the manner substantially as set forth.

Third, The arrangement of the water inlet, S R, substantially in the manner and for the purposes set forth,

[This invention consists, first, in the arrangement of an inclined wheel within a separate reservoir made by elongating the case of the meter; and in fixing upon the periphery of this wheel suitable buckets which shall alternately dip into the water contained in said reservoir, and convey the same into the main reservoir, thereby maintaining a correct water line under all ordinary circumstances, and effecting an equitable registration of gas. It consists, secondly, in preventing the meter from being overcharged; by the employment of a pipe extending up near the water line, and communicating from the supply reservoir to the bottom of the dry well in front of the meter, so that should any attempt be made to overcharge the reservoir, the water will escape through this pipe, and rise into the dry well and stop the flow of gas completely. Also, in a peculiar arrangement of the water inlet pipe, so that it will have no communication with the body of the meter.]

26,424.—A. M. Ford and C. W. Warner, of Jericho, Vt., for an Improvement in Horizontal Water-Wheels:

We claim the construction and arrangement of the lifter, c, and band, d, as shown in Fig. 1, and of the buckets, a and b, combined in the manner and for the purposes substantially as set forth.

26,425.—Geo. Foster, of Brooklyn, N. Y., for an Improvement in Axles or Shafts:

I claim a shaft or axle cellular in its character, and composed of a series of wrought iron rods, or tubes, covered and held together by a casting cast upon the same, and forming the journal wheel, bearing section wheel and pulley.

26,426.—W. P. Goolman, of Dublin, Ind., assignor to himself and Saml. B. Morris, of Wayne county, Ind., for an Improvement in Mole Plows:

I claim, first, The lever, F, rigidly attached to a pivoted mole, R, in the described combination with the rack, F, the whole being constructed and arranged and operating substantially as and for the purposes set forth.

Second, The cam, D, in the described combination with the coulter, Q, and adjustable pivoted mole, R, operating substantially as and for the purpose set forth.

26,427.—Magnus Gross, of Washington, D. C., for an Improvement in Preserving Flesh and Meats:

I claim the application of an air-tight apparatus of displacement to which hydrostatic pressure is applied, for the purpose and in the manner set forth in the specification.

26,428.—Chas. Hadfield, of Brooklyn, N. Y., for an Improvement in Sticks for Exhibition Rockets:

I claim the rocket stick enclosing or in connection with a magazine of powder, in the manner and for the purposes set forth.

26,429.—H. Halvorson, of Cambridge, Mass., for an Improvement in Candle Molds:

I claim the combination with an outer tube, A, of the inner elastic slit tube, B, applied and operating substantially as and for the purpose set forth.

And in combination with the elastic tube, B, I claim the tip, c, of elastic or yielding material, applied and operating substantially as and for the purpose described.

26,430.—Ira Hann, of Hope, N. J., for an Improved Washing Machine:

I claim the combination of the fixed rubber board, n, with the removable rubber, m, friction roll, presser carriage, a b, and operating lever, F B, and M, the whole arranged and operating as specified for the purposes described.

26,431.—J. S. Harbison, of Sacramento, Cal., for an Improvement in Bee-hives:

I claim placing the bee comb, known as worker cells, in a horizontal or nearly horizontal position, so that the cells shall be vertical or nearly vertical instead of horizontal, by the means, or their equivalents, substantially as set forth and represented.

[This invention consists in placing the bee comb, known as worker cells, in a horizontal or nearly horizontal position, so that the cells shall be vertical or nearly vertical, in order to facilitate the labors of the bees in making the green cells.]

26,432.—Wm. Hoffman, of Benicia, Cal., for an Improved Butler's Tray:

I claim, as a new article of manufacture, a single-handed butler's tray, furnished with a hinged, or pivoted handle, so as to be detached or swing out of the way, to facilitate the placing or removing of articles upon it, and to economize room and space in carrying or stowing it away, as set forth and explained.

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26,433.—J. B. Holmes, Jr., of New York City, for Improved Ratchet Pulleys for Blind Cords:

I claim the metallic bar, a, projecting from the window casing, and having teeth on the back thereof, in combination with the bridle pawl, b, passing around said bar, a, and carrying the pulley for the cord, as set forth,

I also claim the porcelain roller, d, on the center-pin, 4, in combination with the bridle-pawl, h, and bar, a, substantially as set forth.

26,434.—A. H. Hook, of New York City, for an Improvement in Clamps for Metal Straps:

I claim the outer griper, a, and nail, e, for fastening the ends of bale and other straps, constructed substantially as and for the purposes set forth.

26,435.—Daniel Hughes, of Rochester, N. Y., for an Improvement in Hoop Locks:

I claim the case or box, A, having slots, a a, in two opposite sides, and provided with a clamp or jaw, B, arranged su stantially as and for the purpose set forth.

[This invention consists in placing within a metal case or box, through which the ends of the hoop to be connected or secured together pass, a clamp or jaw, so hung and arranged within the case or box as to permit the ends of the hoops when the latter is around the bale, to be shoved one over the other through the case or box in order that the hoop may be snugly adjusted on the bale, and, when the ends of the hoop are slightly drawn back under the expansion of the compressed bale cause the jaw to bind firmly on the ends of the hoops, so that the latter will be firmly secured in the case or box, and consequently locked or connected together. The invention is more especially designed to be applied to the hoops of cotton bales, but it may be applied to all metal bale hoops.]

26,436.—Peter Keffer, of Reading, Pa., for an Improvement in Boots:

I claim the above-described mode of making the leg of the boot, the leather being folded in front, and the crimp hammered in, instead of crimping in the usual way, and the ankle being completed by a single seam and one piece of leather, substantially as set forth for the purposes described.

26,437.—L. G. Kniffen, of North Salem, N. Y., for an Improvement in Harvesters:

I claim constructing, as a whole, the shoe on which the cutter and finger bars are supported and adjusted in one piece, combining the guide-box, a, for the cutter bar, the recess, b, for the finger-bar, the slotted bracket, m, for the castor wheel to be attached to the vertical locking portion, d, or its equivalent, the vertical pivot or gudgeon, G, for the whole to be suspended or adjusted on, horizontally, to a position parallel with the inner side of the main frame, as set forth.

26,438.—G. A. Lathrop, of East Saginaw, Mich., for an Improvement in Metallic Window Blinds:

I claim the arrangement of the plate, A, with slots, a, slats or water-sheds, c, and grooves, d, in combination with the slotted slide, B, substantially as and for the purpose specified.

[The object of this invention is to produce a shutter or blind that is at once simple, cheap, easily operated and fireproof, and it consists in combining with a metallic plate provided with suitable slots and water sheds or slats, a slotted slide in such a manner that the light may be admitted or excluded at pleasure.]

26,439.—J. H. Lee, of Camanche, Iowa, for an Improvement in Seed-planters:

I claim the arrangement of the bar, F, cord, J, rotary shaft K, sliding seed-box, G, bars, c, lever, B, and sliding axle, D, as and for the purposes shown and described.

[This invention consists in giving the seed-box and parts immediately connected therewith an adjusting movement independently of the draught frame, so as to greatly facilitate the proper planting of the seed whether sown in drills or hills. The invention also consists in a novel means to assist or aid the turning of the machine.]

26,440.—Horatio Leonard and Henry Ryder, of New Bedford, Mass., for an Apparatus for Molding Candles:

We claim making the receiver or trough, E, separate from the body of the mold or series of molds, and so constructed and arranged as to operate therewith, substantially in the manner and for the purpose set forth.

We also claim the described improved mode of packing the lower orifice of the mold, viz., by means of a spring, a, furnished with rubber or other proper elastic material, the same being arranged and made to operate with respect to the said orifice, as set forth.

26,441.—Benj. A. Mason, of Newport, R. I., for a Machine for Cutting Railway Bars:

I claim, for giving to rails the form, substantially such as herein described, the combination of the series of cutters, arranged in relation to each other, substantially as described.

26,442.—O. C. McCune, of Darby Creek, Ohio, for an Improvement in Corn Planters:

I claim the arrangement of the peculiarly formed rack bar rod, L, bent lever, M, pawl, N, ring, F, cam, c, and arm, d, as and for the purpose shown and described.

[This invention consists in plazing in rear of the plow, used to form the furrow in which the corn is deposited, a shovel, or coverer, and in operating the same by suitable connecting rods and levers, so as to cover the corn in hills, after being deposited in the furrow.]

26,443.—Chauncey Parmelee, of Wilmington, Vt., for a Vegetable-slicer:

I claim supporting the front end of the adjustable plane of bottom, K, on the fixed bottom board of the hopper, so that it shall be stationary relatively to the gate, and arranging at the end of the plane, K, the mechanism for raising it.

I also claim the application of the board or partition, O, to the hopper and the adjustable platform, K, substantially in the manner and for the purpose as specified.

26,444.—Wm. H. Peckham, of Hoboken, N. J., for an Improved Spectacle Frame:

I claim connecting the end pieces, c c, of spectacle frames by the clasp sockets, d d, in the manner and for the purposes substantially as specified.

26,445.—Charles A. Seeley, of New York City, for an Improved Method of Protecting Frictional Electric Machines from Moisture:

I claim enclosing an electrical machine in a covering or box, which is nearly or quite air-tight, and, by means of an absorbent moisture, preserving the air about the machine nearly uniformly dry.

I also claim the insulating covering or box, substantially as described and for the purposes specified.

26,446.—Andrew J. Shepard, of Buffalo, N. Y., for an Improvement in Nut Machines:

I claim, first, Perforating the punch, e, as described, for the purpose set forth.

Second, The cutters, t and t', when constructed and arranged relatively to the dies, L and M, as described.

Third, The combination of the dies, L and M, with the water chambers, l and n, when arranged and operated substantially as described for the purpose set forth.

Fourth, The combination and arrangement of the punch, D (Fig. D), with the water chamber, 7, and openings, 8 9 substantially as and for the purpose described.

26,447.—Joel Y. Schelly, of Hereford, Pa., for an Improvement in Attaching Spokes of Carriage Wheels:

I claim, first, The ferrule, D, when furnished with rings, a a, and applied in the manner and for the purpose set forth.

Second, The screw plates, b, welded upon the inside face of the tire, in the manner and for the purposes set forth.

Third, I claim the combination of (with suitable slots made in the inside face of the tire) the bolt, e, key bolt, g, and plate, h, all arranged in the manner specified for securing the tire rigidly in its place upon the wheel as stated.

26,448.—G. B. Singeltery, of Greenville, N. C., for an Improvement in Manure Drills:

I claim the arrangement of the plow, B, guide board, E, lifting bar, F, guiding bar, G, and rotating hopper or receptacle, D, as and for the purposes shown and described.

[This invention is designed for sowing cotton seed as a manure, either alone or mixed with guano or other fertilizer. The invention consists in the use of a bilge-shaped rotating hopper, applied to a plow in such a manner that the desired end is attained by a very simple and economical arrangement of means.]

26,449.—Stephen Stafford, of Carrollton, Mo., for an Improvement in Hemp-breaking Machines:

I claim constructing the brake with two disks and heads, and uniting said disks by means of rounds or slats armed with obliquely-set teeth, and arranged so that spaces shall exist between them, and they can be adjusted to give the teeth any required obliquity substantially as and for the purposes set forth.

[The nature of this invention consists in constructing the brake with two disks or heads, and uniting them by means of longitudinal rounds or slats armed with obliquely-set teeth, and arranged so that spaces shall exist between them, and they can be adjusted to give the teeth any desired obliquity.]

26,450.—John F. Sterling, of San Francisco, Cal., for an Improvement in Watch Keys:

I claim, as a new article of manufacture, a watch or door key with a hollow stem or pod, open at both its ends, so that anything getting into it that would obstruct its action will drop or be punched out through the open stem, as set forth.

26,451.—Euclid C. Thayer, of Providence, R. I., for an Improvement in Belting for Pulleys:

I claim the manufacture of round belting by preparing the leather or other material in the mode described, and rolling and twisting the same in a spiral form with any required number of conical layers in the cylinder, either with or without a cylindrical space in the center of the belt, and cementing the layers in the process of manufacture, substantially as described.

26,452.—T. S. Underhill, of St. Johnsville, N. Y., for an Improvement in Beehives:

I claim, first, The arrangement of the movable frame, E, in combination with the sliding hive, A, and adjustable side, c, substantially as and for the purpose set forth.

Second, The arrangement of the adjustable boards, G H and D, placed on a frame, F, when said parts are constructed as described, and used in connection with the sliding hive, A, for the purpose specified.

26,453.—Antony Welsch, of Chicago, Ill., for an Improvement in Hand Car for Railroads:

I claim the movable platform, and the attachment thereto of the crank and wheel, in the manner and for the purposes set forth.

26,454.—William Wharton, of Philadelphia, Pa., for an Improvement in Dispensing with Switches on Railroads:

I claim the employment of a car wheel provided with one or more treads in addition to the ordinary tread, upon either the outer or inner side of said ordinary tread, and of the same or different diameter as said ordinary tread, in combination with additional raised rail or rails with a gradual rise, either curved or straight, so placed that such of the said extra treads as desired shall be caused to run upon them, thereby raising the car entirely clear of the ordinary track, and causing it to follow the direction of said raised rail or rails, whether curved or straight, for the purpose of avoiding the necessity for railroad switches, arranged and operated substantially as set forth.

26,455.—William H. Worth and Leonard Finlay, of Canton, Mo., for an Improvement in Seed-planters:

We claim the arrangement of the longitudinally-moving slotted plate, N, vertical gate, L, sliding bar, G, operating lever, H, shoes, I, and rotary colters, K, as and for the purpose shown and described.

[The nature of this invention consists in the arrangement of rotary cutters placed before the shoes for forming the drill, and hung upon a pivoted frame in such manner that they will conform to the irregularities of the surface of the ground in the operation of planting corn. It also consists, in connection with a reciprocating seed slide for depositing the seed in the shoe, in arranging a vertical gate, working in the heel of the shoe, and operated by means of a peculiarly-slotted piece fixed to the seed slide, so as to deposit the seed in the drill from the shoe at regular and required intervals along the line of the furrow; the corn being retained in the heel of the shoe until the lever is moved back ready to receive another charge of seed.]

26,256.—Henry Bell, of Clinton, Ill. (assignor to Fenton F. Bogar and Joseph W. Tidball, of same place), for an Improvement in Seed-planters:

I claim, first, The arrangement and combination of the rock shaft, J, cog segments, I, pinion, K, crank shaft, Q R, ratchet bars, H H', springs, S S, feed slide, G, and discharge regulating valve, O, when the same are arranged and combined in the manner set forth.

Second, In combination with the above, the arrangement of the treadle, V, and hand lever, U, together and on the same fulcrum, so that the feed slide can be worked either by the hand or foot, substantially as and for the purposes set forth.

Third, The combination with the foregoing peculiar arrangement of parts for dropping the seed, the arrangement of a b c d, for regulating the depth of the furrow-openers, substantially as and for the purpose set forth.

26,457.—William Bellows, of Cincinnati, Ohio (assignor to himself and Charles W. Smith, of same place), for an Improvement in Re-vivifying Bone Black:

I claim, first, An improved apparatus for re-vivifying bone black, arranged and constructed as described.

Second, The flanning bottoms of the retorts, a a, when arranged and combined with the described apparatus for the purpose specified.

Third, The flanches, c c, in combination with the retorts, a a, for the purpose of allowing for expansion and contraction and replacing of retorts, as well as protecting internal heating surface, substantially as described.

Fourth, The chamber between flanches, c c, and lower plates, d d, when, for the purpose of preventing undue radiation of heat, and for the purpose of passing off the offensive gases arising from retorts when said chamber is combined with flanches, c c, and cover plates, d d, for the purpose described,

26,458.—George H. Bronson, of Cincinnati, Ohio (assignor to himself and David Millard, of same place), for an Improvement in Hydro-carbon Vapor Apparatus:

I claim the arrangement and combination of the zigzag folded surfaces extending over the projecting edges, F, with the projecting edges, E C C c c, &c., in each of the several cells or chambers of the impregnating apparatus, substantially in the manner and for the purpose set forth.

26,459.—Mortimer S. Harsha, of Sycamore, Ill. (assignor to himself, Rufus S. Sanborn and H. B. Jones, of same place), for an Improved Churn

I claim an entirely stationary brake-dash, in combination with a cream-receiver, made to rotate on a vertical or upright shaft, as described and for the purposes set forth.

26,460.—Thos. C. Hendry (assignor to himself, J. Dillworth and F. E. Askin), of Conyers, Ga., for an Improvement in Gravel Cars:

I claim the combination of the double inclined bottom, D D, and swinging doors, G G, the latter being operated by the rods, H, bar, I, and lever, J, substantially as and for the purpose set forth.

[The object of this invention is to obtain a gravel car which may have its load readily discharged simultaneously from both sides, and which may be constructed in a strong and durable manner, at a reasonable cost.]

26,461.—Jas. W. Lawrence (assignor to himself, Henry Brewster and John W. Britton), of New York City, for an Improvement in Connecting Elliptic Springs to Vehicles:

I claim the manner of combining and securing the back axle and the elliptic spring, specifically as described.

26,462.—Charles Miller (assignor to George Ricardo), of New York City, for an Improvement in Sewing-machines:

I claim, first, The combination with the shuttle driver, K, of the releasing plate and lifter, g, as and for the purpose shown and described.

Second, The employment of a shuttle made of two springs, i j, in the peculiar manner shown and described, in combination with the bobbin, l, as set forth.

[This invention consists in the employment, in combination with a feeding dog operating below or at the back of the material being sewed with a simple reciprocating rectilinear motion parallel with the surface of the material and a presser acting on the top or in front of the material to press it against or towards the teeth or face of the dog, of a plate, which may be termed a releasing plate, arranged on the same side of the material as the dog, and having a movement in a direction perpendicular, or nearly so, to the face of the material, for the purpose of lifting the material and keeping it released from the dog during the backward movement of the latter. The invention also consists in effecting the releasing movement of the said releasing plate by means of a wedge-like projection, or its equivalent, formed upon or carried by a shuttle driver.]

26,463.—E. R. Morrison (assignor to S. C. Hill), of Brooklyn, N. Y., for an Improvement in Shingle Machines:

I claim, first, The arrangement of the knife, H, and projection, v, in connection with the reciprocating bed, substantially as shown, whereby the bolt is supported as the bed passes underneath it during the cutting or riving operation.

Second, The employment or use of the planers or knives, C C, operated by the plates, D D, bar, E, and ledge or projection, F, on the bed, G, substantially as and for the purposes described.

RE-ISSUES.

Isaac Rulofson (assignor to himself and Lemuel Harvey), of Penn Yan, N. Y., for an Improvement in Plows. Patented March 1, 1859:

I claim moving and adjusting the beam, A, laterally upon the standard, B, by means of the head, L, and dovetailed connections, m m and j j, or their equivalents, in such a manner that the line of draft or direction of the beam shall always remain parallel with the landside of the implement, substantially as and for the purposes shown and described.

Daniel R. Prindle, of Bethany, N. Y., for an Improvement in Boilers and Steamers. Patented Sept. 13, 1859:

I claim the construction and arrangements of the two sections, A and B, so that the section, A, may be used separately as a caldron, or both sections be securely united and employed as an enclosed boiler for generating steam, as specified.

I also claim the combination of the cylindrical or cylindroidal support and fire-box, C, entirely open at the top, with the uniting and supporting flanges, e f, of the spherical or spheroidal sections, A B, constructed as described, so that, by presenting a thin edge only to the flanges, it allows the utmost facility of clamping and unclamping the sections, and of moving or adjusting the same, while it firmly sustains the boiler and shields the packing between the flanges from the heat of the fires, substantially as set forth.

I also claim the trough, F, formed by the tip projecting above the upper flange, f, for the purpose of containing water to protect the packing between the flanges from injury by heat, substantially as described.

John M. Lunquest, of Griffin, Ga., for an Improvement in Pumps. Patented Nov. 1, 1859:

I claim the arrangement of two or more cylinders, B B, piston heads, C C, ball valves, a a, air-chamber, F, and valves, a' a', said valves being kept in position by proximity to each other and the sides of the chamber, F, substantially in the manner and for the purpose specified.

M Clintock Young, Jr., of Frederick, Md., for an Improvement in Harvesters. Patented Sept. 21, 1858; re-issued July 19, 1859; again re-issued Dec. 13, 1859:

I claim giving the rake the two described regularly succeeding axial movements over and across the platform of said machine, that is to say, an elevated curvilinear movement from rear to front over said platform and a horizontal movement from front to rear upon or near to said platform, by the means substantially as described and for the purpose set forth.

ADDITIONAL IMPROVEMENTS.

Ephraim Parker, of Marlow, N. H., for an Improvement in Clothes Pins. Patented Jan. 15, 1856:

I claim adding bits to the machine so as to bore the stuff at the time it is being shaped and turned at the same operation.

I also claim, as above, the boring the stuff first and then putting it upon a small mandrel which revolves, so that the work shall be turned and shaped to the right pattern and finished at each end upon its own center hole all at one operation.

I also claim the above improvements, as before set forth, or any equivalent, which substantially effects either of the above objects, by any other arrangements of mechanism or mechanical devices.

Wm. Sims, of Dayton, Ohio, for Improved Refrigerators. Patented Feb. 8. 1859:

I claim the arrangement, severally, of the escape pipe, G, in combination with the induction pipe, E, so as to operate conjointly therewith and in connection with a flue, K, substantially as and for the purposes set forth.

EXTENSION.

Samuel Pierce, of Troy, N. Y., for an Improvement in Cooking Stoves. Patented Dec. 6, 1845; re-issued April 24, 1847; again re-issued July 31, 1847:

I claim making the top of the metal ovens of cooking stoves of fine brick, or other earthy substance, when this is combined with a stove in which the products of combustion from the fire-chamber pass first over the top of the oven, substantially as described, whereby the heat

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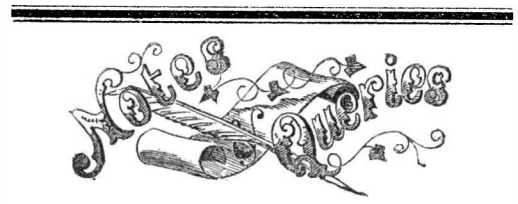
in the oven is equalized and the vapors or gases evolved in the oven are absorbed and carried off, as described.

I also claim the arrangement of parts by which I supply the fire with heated air, said arrangement consisting mainly of the apertures in the front plate or doors and the plate, S, in front of which the air must descend on its passage to the grate bars: the heating of the admitted air has been attempted under other arrangements, and I limit myself in this particular, therefore, to the special combination of parts by which I attain this end.

And finally, I claim making the plate of that part of the oven which extends under the grate, in the manner substantially as described, and connected with a receptacle for ashes at the bottom for the purpose of discharging the ashes that fall from the grate, as described, whereby I am enabled to heat this part of the oven more effectually and equally, and to avoid the burning out of the grates, as described.

NOTE.—Out of the number of patents in the above list—SIXTY—all which were issued last week, TWENTY-FOUR of them were cases which were prepared and prosecuted through the Scientific American Patent Agency.



E. P., of Conn.—Porcelain or china-ware is ornamented with metallic oxyds, which are ground up with a fusible flux, painted on the porcelain, then fused in a furnace and afterwards burnished with a proper tool. If it is required to gild with pure gold, a powder of the metal, obtained by grinding or by deposition from an acid solution, is mixed up with a flux of borax and some oil of lavender or turpentine, until it is of a creamy consistency, when it is put on the article by the artist with a hair pencil. It is now allowed to dry, then fused in a kiln at such a temperature as does not affect the porcelain, while it melts the metal and burns it into the pores of the article. When it comes out of the furnace, the part which has been gilded is of a dull dark brown color; but by rubbing it with a burnishing tool, it soon shines with its usual metallic luster. A red color for porcelain is obtained from sub-oxyd of copper, a yellow from chromate of lead, and blue from the oxyd of cobalt or the "lapis lazuli." These are painted on like the gold, to produce the various shades and colors. The artists who decorate porcelain usually possess a very cultivated taste and great skill in forming figures, flowers, &c. Every patented article, when practicable, must be stamped with the date of the patent; each omission subjects the seller of the article to a fine of $100.

S. B., of N. J.—If your theory is correct regarding atmospheric electricity always being minus, all the accidents which have occurred to life and property from lightning must have been by upward strokes from the earth, not downward, as is generally supposed. And if, as you state, atmospheric electricity always descends silently in the rain drops, the electricity of the earth should flow upwards by the same conductor; and as a consequence, we never should have any lightning at all. Write out your views and observations on the subject in an uncontroversial manner, and they will be in a better shape to go before the public.

J. T., of Ind.—You say of Koch's mode of applying muscular power:—"This method of applying power is much the same as the old spring pole lathe. The bow-drill, and many other common machines, act upon the same principle. But the use of the ratchet wheel and spring for continually winding up the machine, renders it very convenient for many purposes, and I have wondered why it has not come into more general use and favor. If, however, it has been comparatively unknown in the improved form, and therefore unused, the publication of the patent of Louis Koch may bring to notice its superior merits, if it possesses them; and we may have a score of new 'combinations' based upon it, some of which will doubtless prove very good and useful." If you will examine Mr. Koch's claim, you will find that his combination is novel.

W. A. K., of Mass.—To draw hollow wire in a tapering form for blow-pipes, it must be drawn over a tapering or conical mandrel of the exact size which it is desired to make the tube. The metal will require to be heated for this purpose, and the whole operation conducted with care.

W. A. S., of Ohio.—We do not know where you can procure one of Battelle's stitching machines.

H. L. C., of N. J.—We cannot recommend any lamp as being perfectly safe for burning the explosive fluid composed of four parts alcohol and one of turpentine by measure. The lamp to which you refer is a very good and safe one of the kind. Common burning fluid will not explode until it is generated into gas and mixed with six volumes of the atmosphere.

H. A. B., of N. Y.—Soft gold solder is composed of four parts gold, one of silver and one of copper. You can make it much softer by adding brass, but, in proportion as you add base metal, the solder becomes more liable to oxydize.

H. M. Brown, of Richmond, Va., wishes to purchase the best machinery in use for making brooms.

W. B. L., of Ill.—You state that you cannot get fresh plaster-of-Paris to stick on the back of your mill-stone—that it always peals off when the stone is set in motion. The best way to make it stick upon the top of the old coat is to moisten the latter, which is left upon the stone, with clean hot water, then mix up the fresh plaster with warm water and pour it on, taking care to stir it, so as to displace any air bubbles that may prevent it adhering to the surface; and allow it to dry thoroughly before the stone is set in motion. We have been informed that plaster-of-Paris, made into a paste with dilute alum liquor, and applied quickly to mill-stones, makes a very adhesive and hard cement.

T. C. R., of Wis.—The word "equivalent," in a claim, is quite superfluous. By the decisions of the United States courts, all claims cover equivalents.

C. C. P., of Ohio.—You will find articles on crystals in most of the hand-books of chemistry, which will probably give you all you want to know on the subject. Draper's Chemistry and Porter's both treat of the subject. The subject of "fluids" is so broad and varied that, unless we know more definitely what you want, we cannot direct you where to find it.

G. E. S., of Pa.—We can see no reason why a concentric is not as good as an eccentric fan. We suppose you intend to employ it for a blower. We therefore advise you to be careful in so constructing it that the air will not escape backwards over the points of the wings. The "Dimpfel Blower," which has a rotating case, prevents this back-lash of air, and it is therefore an excellent apparatus.

E. C. J., of Ill.—The amount of gas required to raise 75 pounds 200 feet high, depends on its temperature, and it can be compressed indefinitely according to the pressure to which it is subjected. We have no objection to your using our recipes as you suggest.

J. A., of Mass.—Exhaust steam may be conveyed into water so as to prevent the noise; this is frequently done.

W. A. S., of Ill.—The price of large plate glass, say 5x10 feet and ¼ of an inch thick, is from $2 to $3.50 per square foot. Schanck & Downing, No. 45 Chambers-street, this city, have a plate 9 feet 2 inches by 14 feet 2 inches, which they will sell for $500. It is said to be the largest in the country.

B. C. S., of Tenn.—For a small gymnasium, the first thing required is a ladder, to be suspended over the boys' heads for them to swing on by their hands. The next most useful articles are a set of dumb bells, and next to these a pair of ropes, with iron rings at the ends, for swinging by the hands. You will find that this simple apparatus will give most of the gymnastic exercises. But if you want to enlarge, add, in the order named, parallel bars, a climbing pole, weight and pulley, and stuffed bag for fist exercise.

J. J. S., of N. Y.—We are not aware that the heat conducting power of india-rubber or gutta-percha has been measured; it is small, however, we should think smaller than that of marble or any of the substances in your list.

D. J. S., of N. Y.—Your letter, regarding the strength of wrought-iron beams, will be answered in our next.

Money Received

At the Scientific American Office on account of Patent Office business, for the week ending Saturday, Dec. 17, 1859:—

D. B. S., of N. J., $10; H. & J., of Ohio, $30; J. V. T., of Ill., $25; S. W. R., of Mich., $35; A. H. C., of Wis., $20; G. & G. N. M, of Conn., $30; N. A. P., of Tenn., 25; J. W. M., of Mass., $25; P. C., of N. Y., $45; H. M., of N J., $30; F. & M., of Mass., $30; J. B. M., of N. Y., $30; E. M., of N. Y., $20; J. S. L., of Pa., $30; T. B., of N. Y., $47; J. G. W., of Ga., $30; W. S. K., of Conn., $30; G. & R., of Mass., $17; E. A. S., of Pa., $30; J. B., of N. Y., $25; S. C. H., of N. Y., $55; G. E. H., of N. Y., $10; R. C. H., of N. J., $30; T. C. R. of Wis., $25; B. D. & Co., of Pa., $25; J. G., of Ga., $30; L. B D., of Wis., $50 M. P. W., of R. I., $25; E. B., of N. Y., $30 E. M., of Ind., $30; O. H., of N. Y., $50; W. E. B., of N. Y., $20; J. D. M., of Pa., $25; J. M. K., of Vt., $30; G. B. L., of N. Y., $25; G. McK., of Ill., $30; J. A. C., of C. W., $30; R. H., of N. Y., $25; L. E., of Mich., $30; J. M. L., of R. I., $25; R. M. C., of Mich., $25; H. H., of N. Y., $30; J. M. D., of N. Y., $30; P. Ver V., of N. Y., $25; G. C. D., of Ohio, $15; H. L. B., of Ill., $30; R. S., of Conn., $20; T. B. & Co., of Va., $25; C. V. L., of Texas, $55; V. M. B., of Pa., $25; G. M., of Vt., $40; J. K., of N. Y., $30; H. M. P., of Mo., $25; C. & L., of N. J., $15; J. P. M., of Ind., $30; G. D., of Ohio, $30; B. & W., of Pa., $30; W. S., of N. Y., $30; G. K., of N. Y., $25; L. P. M. of N. Y., $25; S. F. Van C., of Cal., $25; I. H., of Ind., 25; H. R., of Mass., $100; I. W., of Maine, $30; L. F., of Mass., $30.

Specifications, drawings and models belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Dec. 17, 1859:—

S. W. R., of Mich.; B. D. & Co., of Pa.; J. S. L., of Pa.; S. F. Van C., of Cal., J. W. M. of Mass.; P. Ver V., of N. Y.; R. H., of N. Y.; T. B., of N. Y.; G. K., of N. Y.; J. V. T., of Ill.; J. D. M., of Pa.; R. S. of Conn.; H. & V., of N. Y.; W. H. McN., of N. Y.; N. A. P., of Tenn.; C. B. W., of N. Y. (3 cases); J. B., of N. Y.; J, M. L., of R. I.; E. M., of N. Y.; R. M. C., of Mich.; V. D., of N. Y.; V. M. B., of Pa.; L. B. D., of Wis. (2 cases); B. & A., of Pa; A. B., of N. Y.; P A. C., of C. W.; J. P. M., of Ind.; J. H., of Ill.; G. B. L., of N. Y.; I H., of Ind.

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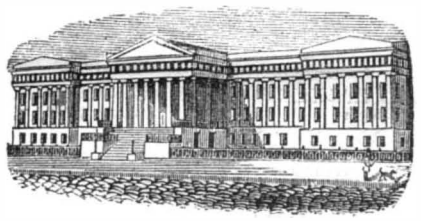

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Your obedient servant, J. HOLT.

Communications and remittances should be addressed to

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